

حمل الآن

مجاناً وحصرياً

المراجعة رقم (1)

اختبار شهر مارس



Summary

of Unit 3

Lesson 1

1 The Dream of Thinking Machines that operating automatically.

- » Ancient civilizations made efforts to invent "thinking machines" and build machines work on their own (Automation systems).
- » These efforts were not AI as we know today

2 The Modern Era of Artificial Intelligence.

1 Alan Turing (The Father of AI):

- » In 1950, he founded modern AI and asked, "Can machines think?"
- » **The Turing Test:** if a person chatting via text cannot tell if they are talking to a human or a computer, the program passes the test.

2 The Dartmouth Conference (1956):

- » A gathering of the smartest scientists met in USA.
 - **The Goal:** To develop machines that could learn and think like humans.
 - **The Result:** The term "Artificial Intelligence" was officially born here.



3 Years of Excitement and Great Hopes (1956 - 1970)

- » Scientists created the first AI programs
 - 1- **Logic Theorist:** Solve logical mathematical problems.
 - 2- **General Problem Solver:** try to solve general problems step-by-step.
- » **Early Challenges:** Computers were very slow with limited memory; they need hours to solve a simple math problem.

4 Expert Systems: Learning from Experts (1970 - 1980)

- » Scientists decided to teach machines special knowledge from experts.

» MYCIN (The Robot Doctor): A famous system used to diagnose infectious diseases.

- It asked questions about symptoms (like fever).
- It suggested treatments with accuracy as good as expert doctors.

5 AI Winter: When Dreams Faded (1980 - 1990):

» AI faced a major crisis, and the great initial excitement turned into disappointment due to:

- **Overstated Promises:** Scientists promised more than they could deliver.
- **Technical Limitations:** Computers were still slow and had limited memory.
- **High Cost:** Developing these systems was very expensive.
- **Limited Results:** Programs only worked in very narrow fields.
- **Lesson learned:** Scientists learned that AI is harder than they thought and requires patience.

6 The Renaissance: The Return of Hope (1990 - 2010)

» **The Internet & Data Revolution:** The appearance of the Internet provided huge amounts of data.

» **Machine Learning:** A new way where machines learn for themselves from data.

» **Amazing Achievements:** The computer beat the world chess champion, for the first time

7 The Modern Revolution: Deep Learning (2010 - Now)

» **Deep Learning:** An advanced type of Machine Learning that mimics the human brain using **Artificial Neural Networks** (interconnected "neurons" that send and receive signals).

» **AlphaGo Success:** A computer won against the world champion in "**AlphaGo**", a Chinese game much more complex than chess.

**Lesson 2****» AI Examples in Daily Life:**

- **In Your Phone:** Voice assistants, facial recognition, and text prediction.
- **In Games:** Smart characters that interact and adapt with you.
- **On the Internet:** Smart search engines and personalized content suggestions.

» Artificial Intelligence: It is the ability of machines to "think," make decisions, and solve problems.

Or It is the ability of computer systems to simulate human abilities, such as:

- Learning from data.
- Making decisions.
- Solving problems.
- Understanding natural language.
- Recognizing patterns.

» Deeper Understanding of AI: AI can process huge amounts of data very quickly and search for relationships to make logical decisions.

» Comparison between Human Intelligence and Artificial Intelligence:

Artificial Intelligence	Human Intelligence
Pure Data Processing: No feelings, no emotions, and no self-awareness	Humans feel emotions like joy, sadness, love, and empathy.
Super Speed & Accuracy: It processes trillions of data points in seconds with high accuracy.	Humans create new ideas and solve problems in untraditional ways.
Logic and Pure Data: Decisions are based on programmed rules and data.	Humans understand jokes, sarcasm, hidden and complex social situations.



» Why is AI Important Today?

- AI is a powerful tool that solves big problems and makes life easier.

» Examples of AI in Our Daily Lives:

- **Language Models (GPT):** Programs can conduct natural conversations and assist with school homework. (Such as Chat GPT).
- **Smart Phones:** Improving photos automatically and instant text translation and image recognition.
- **Voice Assistants:** Siri, Alexa, and Google Assistant use Natural Language Processing to understand speech, convert voice to text, and execute requests.
- **Games:** Enemies that react intelligently to your movements and personalized tips to improve your skills.



Non-Player Characters (NPCs) use AI to choose the best strategies to attack or escape, learning from your moves to become more challenging.

- **Entertainment:**
- **Watch IT:** Suggests movies based on your watch history.
- **Spotify:** Discovers songs you like and organizes personalized playlists.
- **At Home:** 1- Smart lighting systems. 2- Smart vacuum.
- **Self-Driving Cars:** Vehicles that can drive themselves.

Lesson 3

- ### » Ethical Responsibility in AI Uses:
- AI is a powerful technology can change the world for the better, but it must be used wisely, ethically and responsibly to ensure safety for everyone.

» AI systems should follow the following rules:

- 1 **Fairness and Transparency:** AI systems should be fair and treat all people equally without discrimination based on race, gender, or religion (Justice for all).



- 2 Privacy and Data Protection:** Personal information must remain safe. No one has the right to use your data without your permission. read the privacy settings of any application you use.

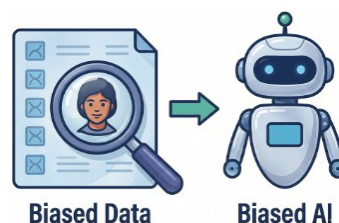
3 Human Supervision and Control:

AI is powerful, but it is still a tool that must be controlled by humans.

- Humans Set the Goals and create the algorithms.
- Important decisions that affect people's lives, such as:
 - 1 Critical medical decisions.
 - 2 Judicial rulings.
 - 3 National security.
- These must always be made by humans because humans have:
 - 1 Awareness.
 - 2 Ethics.
 - 3 Empathy.
 - 4 The ability to understand complex social cultural situations.
- Humans set the values and principles that AI systems must follow.
- Humans are the leaders and the final decision-makers.

4 The Problem of Bias in AI:

- Bias happens when an AI system "learns" unfair patterns from the data it is given.
- If a system is trained on incomplete or unfair data, its decisions will be biased.
- Developers must use high-quality, fair, and diverse data when training AI systems to ensure fairness and accuracy in AI results.



» How to be a Responsible "Smart User"

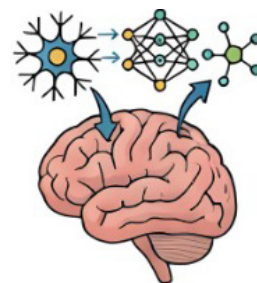
- 1 **Think Critically:** Do not trust everything AI produces automatically.
- 2 **Verify Information:** Learn how to ensure the accuracy of information.
- 3 **Use AI responsibly:** Use technology to improve your life and the lives of others.



Lesson 4

» Scientists created Artificial Neurons inside computers to help machines "think" and make decisions.

» **Artificial Neuron:** It is a small unit inside the computer that tries to imitate how humans think and learn.



» **Components of an Artificial Neuron :** It consists of 5 main parts:

- 1 **Inputs:** The data that enters the cell (e.g., image, sound, or number).
- 2 **Weights:** Numbers that help the neuron determine the importance of each piece of information.
- 3 **Bias:** A number added to the total to adjust the final result.
 - **Benefits:** It makes the neuron more flexible. It allows the cell to produce results even if inputs are zero.
- 4 **Activation Function:**
 - This is the "Decision Maker."
 - It calculates the sum of $(Inputs \times Weights + Bias)$.
 - It decides whether the cell should send a signal (Turn ON) or not.
- 5 **Output:** The final result or signal sent out by the neuron.

» **Most Famous Activation Functions:**

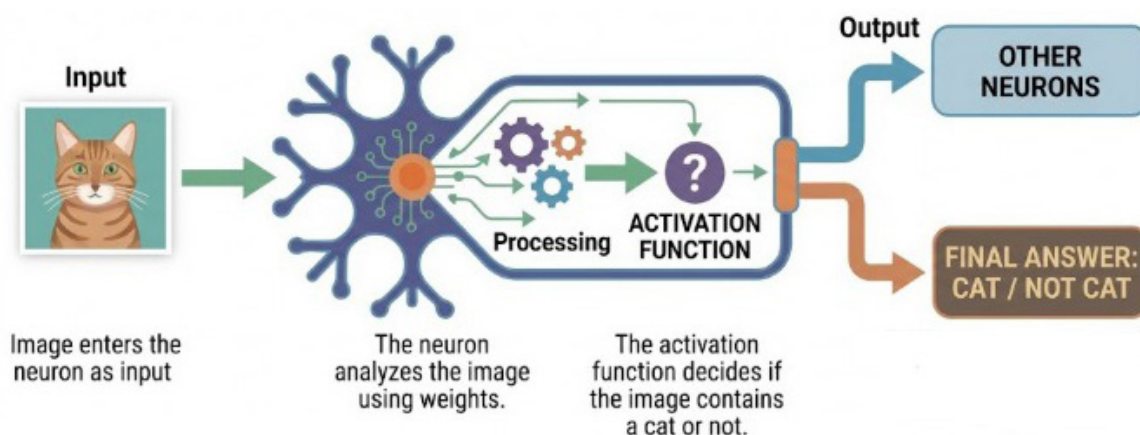
Name	Function	Example
Threshold	It tells the cell: If the value is greater than a certain number, the result = 1. If it is less or equal, the result = 0	- Imagine an exam out of 100, and passing is 50. If you get 60, "Pass" - if you get 40, "Fail". - It Gives Yes or No.
Sigmoid	This function gives a ratio or probability between 0 and 1	- The computer analyzes an image and says: "Probability this is a cat 85%. If the ratio is high, we trust the decision. - It Gives ratio or probability.
ReLU	It gives the same value if it's positive but if it's negative, it change it to zero.	- A strong sound is recorded. - a very weak sound is ignored.

**Lesson 5****» Artificial Neural Networks (ANNs):**

- The power the most advanced AI today.

» How to Build an Artificial Neuron:

- To build an artificial neuron, we need to:
 - 1 Identify the **type** of input data (such as numbers or images).
 - 2 Give a **weight** to each input
 - 3 Multiply each input by its weight, then add the results together.
 - 4 Send the result to the activation function
 - 5 Get the final output, which represents the decision or prediction.

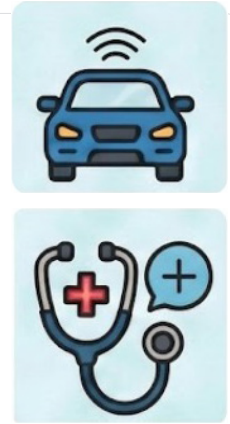
**» How are neurons used in Artificial Intelligence ?**

- When we connect thousands of artificial neurons together, we get a powerful **neural network** that can:
 - 1 Learn from experiences.
 - 2 Improve its performance over time.
 - 3 Solve complex problems such as self-driving cars or diagnosing diseases.



» Real-Life applications of artificial neuron:

- Smart assistants like Siri and Alexa
- Smart cameras that recognize faces.
- Self-driving cars.
- Instant translation between languages.
- Diagnosing diseases in hospitals.
- Suggesting movies on platforms like YouTube.



Lesson 6

» **Data Analysis:** It is the process of inspecting, cleaning, and transforming data to extract useful information and make fact-based decisions.

» Using Python for Data Analysis:

- Python is one of the best programming languages for data analysis because:
 - 1 **Easy to learn and use:** Its simple syntax makes it suitable for beginners.
 - 2 **Powerful libraries such as:**
 - **Pandas:** Used for data processing and manipulation.
 - **NumPy:** Used for scientific and mathematical calculations.
 - **Matplotlib & Seaborn:** Used for data visualization (graphs).
 - 3 **Large Support Community:** Many educational resources are available.
 - 4 **Compatibility:** Works perfectly with AI and Machine Learning.

» Basic Concepts in Data Analysis:

- 1 **Mean (Average):** It is the sum of values divided by their count.
 - **Python Example using NumPy:**

```
Python - Prep2
1. import numpy as np
2. data = [10, 20, 30, 40, 50]
3. mean = np.mean(data)
4. print("The Mean is :", mean)
```



- **Note:** The result is usually a **float** (decimal number), even if the result is a whole number.

2 Maximum and Minimum Values:

- **Max ():** The largest value in the dataset.
- **Min ():** The smallest value in the dataset.

» Python Example:

maximum = np.max(data).

minimum = np.min(data).

3 Types of Data can be Analyzed:

1- Numerical Data:

- **Integers:** Whole numbers (e.g., age, product count).
- **Decimals:** Numbers with fractions (e.g., weight, price).

2- Text Data: Comments or articles, analyzed using ULP.

3- Date and Time: Specific dates analyzed using the Pandas library.

4 Data Analysis with Pandas:

- To perform operations like calculating the time between two events, text dates must be converted into **DateTime objects**.
- **Python Example:**

```
Python - Prep2
import pandas as pd
dates = ["2023-01-01", "2023-01-02", "2023-01-03"]
date_series = pd.to_datetime(dates)
print(date_series)
```

» Why use pd.to_datetime()?

- **Time Operations:** They allow you to calculate the period between dates or extract specific parts (Day, Month, Year).
- **Data Validation:**
It automatically rejects incorrect dates (like "2023-13-01") that don't exist.
- **Grouping:** It helps group data (e.g., calculating total sales per month).

February and March Model Exams

Model Exam

1

1 Choose the correct answer:

- 1 What is the element that artificial intelligence does not have but humans do?
 - a. The ability to store data.
 - b. The ability to learn.
 - c. The ability to feel and understand values.
 - d. The ability to analyze numbers.
- 2 What is an artificial neuron?
 - a. Program to run games.
 - b. Unit that tries to imitate human thinking.
 - c. Part of computer memory.
 - d. Real biological cell.
- 3 What is the basis for building what is known as artificial neural networks?
 - a. Complex algorithms.
 - b. The artificial neuron.
 - c. Intelligent assistants.
 - d. The instant translation function.
- 4 Which library is used to perform mathematical calculations like the mean?
 - a. NumPy
 - b. Matplotlib
 - c. Siri
 - d. Excel
- 5 Which part of the cell helps it make a decision even when inputs are zero?
 - a. Inputs.
 - b. Weights.
 - c. Bias.
 - d. Input function.
- 6 AI systems become "biased" when they are trained using
 - a. too much data
 - b. very fast computers
 - c. incomplete or unfair data
 - d. diverse and fair data
- 7 From the examples of using AI on the Internet:
 - a. Changing the screen color.
 - b. Suggesting appropriate content.
 - c. Blocking the Internet.
 - d. Increasing browser speed.

2

- 

2

1

- 

- 3 What is the step that follows determining the type of data and assigning a weight to each input in building the artificial neuron?
 - a. Obtaining the final output.
 - b. Passing the output to the activation function.
 - c. Summing the inputs after multiplying them by their weights.
 - d. Analyzing the image using the weights.
- 4 What is the benefit of `pd.to_datetime()`?
 - a. Converting text into numbers.
 - b. Converting text dates into a time format.
 - c. Deleting dates.
 - d. Sorting data automatically.
- 5 Artificial neurons technology are used in:
 - a. Analyzing fixed product prices.
 - b. Identifying product prices manually.
 - c. Displaying a list of all old prices.
 - d. Predicting the weather or prices.
- 6 is the basic building unit of Neural Networks.
 - a. Instant translation.
 - b. Screen brightness.
 - c. The artificial neuron.
 - d. Manual data entry.
- 7 Who makes important decisions in systems based on AI?
 - a. Only AI
 - b. Voice assistants.
 - c. Humans.
 - d. Robots.

2 Put (✓) or (X):

- 1 The idea of artificial intelligence is a modern concept that has appeared in recent years. ()
- 2 Artificial intelligence relies only on data processing without self-awareness. ()
- 3 The human is the final decision-maker because they possess ethics and awareness. ()
- 4 No entity has the right to use your personal data without your consent. ()

- 5 The weights in the neuron do not affect the final decision. ()
- 6 The step that precedes passing the output directly to the activation function is assigning a weight to each input. ()
- 7 The phone camera that improves photos automatically uses Artificial Intelligence. ()
- 8 Deep Learning means computer learns from mistakes. ()

Model Exam

3

1 Choose the correct answer:

- 1 How can artificial intelligence help solve the problem of traffic congestion?
 - a. Manufacturing more cars.
 - b. By analyzing data and intelligently organizing traffic flow.
 - c. By canceling traffic signals.
 - d. Disabling car movement.
- 2 Which of the following is an example of responsible use of artificial intelligence?
 - a. Using it to harm others.
 - b. Using it to improve people's lives.
 - c. Using it to spread rumors.
 - d. Using it without reviewing the data.
- 3 Which type of data can be analyzed using NLP?
 - a. Numerical data.
 - b. Images.
 - c. Text.
 - d. Dates only.
- 4 One real-life applications of artificial neurons related to content suggestion is
 - a. smart assistants like Siri.
 - b. face recognition cameras
 - c. suggesting movies on platforms like watch it.
 - d. self-driving cars.

- 5 What is the function of the Activation Function?
- a. Managing memory.
 - b. Storing data.
 - c. Calculating weights.
 - d. Making the final decision.
- 6 The ethical rule that states your data cannot be used without your permission is
- a. fairness
 - b. privacy
 - c. responsibility
 - d. transparency
- 7 Teaching a computer to play chess and win against the best players is an early example of
- a. machine learning
 - b. 3D printing
 - c. the Internet
 - d. using Office software

2 Put (✓) or (X):

- 1 The Turing test is a method to determine whether a machine can simulate human thinking. ()
- 2 Human intelligence possesses creativity while artificial intelligence imitates and does not innovate. ()
- 3 Robots can be programmed to make decisions based on data. ()
- 4 Bias helps the neuron to give results even in the absence of inputs. ()
- 5 Artificial neurons are used only in language translation and weather forecasting, and are not used in image recognition. ()
- 6 The idea of AI is a very modern idea that appeared in the last few years. ()
- 7 Artificial Intelligence can feel human emotions. ()
- 8 Bias in AI may happen due to incomplete or unfair data. ()

Model Exam

4

1 Choose the correct answer:

- 1 What is the best description of artificial intelligence?
 - a. Making machines faster and stronger.
 - b. Making machines larger in size.
 - c. Making machines think and learn like humans.
 - d. Making machines smaller in size.
- 2 The function `np.mean()` is used to calculate
 - a. the largest number.
 - b. the smallest number.
 - c. the mean.
 - d. summing two lists.
- 3 What is the main role of the activation function in an artificial neuron?
 - a. Decide the final decision (Yes/No).
 - b. Identify weights for each input.
 - c. Add the weighted inputs.
 - d. Entering the image as an input.
- 4 What is the function of Inputs in an artificial neuron?
 - a. Saving results.
 - b. Receiving information.
 - c. Sending decisions.
 - d. Deleting data.
- 5 If a facial recognition system only recognizes one race, this is an example of
 - a. fairness
 - b. bias
 - c. responsibility
 - d. privacy
- 6 Weights are used to
 - a. determine input importance .
 - b. decorate data.
 - c. store sounds.
 - d. run the activation function.
- 7 The Threshold function gives a "Pass" result if the value is a specific number.
 - a. less than
 - b. equal to
 - c. greater than
 - d. both a and b



2 Put (✓) or (X):

- 1 Deep learning is an advanced type of machine learning. ()
- 2 Smart search engines like Google do not rely on artificial intelligence. ()
- 3 Using artificial intelligence to improve the lives of others is responsible use. ()
- 4 The activation function is responsible for executing the final decision of the neuron. ()
- 5 The activation function is the one that analyzes the image using the weights in the example of recognizing a cat. ()
- 6 The Threshold function gives values between 0 and 1 only. ()
- 7 An artificial neuron can give a result even when inputs are zero. ()
- 8 The final goal of an artificial neuron is to obtain the final output which represents a decision or prediction. ()

Model Exam

5

1 Choose the correct answer:

- 1 Artificial intelligence is characterized by
 - a. It has feelings.
 - b. Free artistic creativity.
 - c. It has self-awareness.
 - d. It processes data at a very high speed.
- 2 What is the function of the NumPy library?
 - a. Drawing charts.
 - b. Dealing with text.
 - c. Image analysis.
 - d. Scientific calculations.
- 3 The "Robot Doctor" program designed in the 1970s to diagnose infectious diseases was called
 - a. Logic Theorist
 - b. AlphaGo
 - c. MYCIN
 - d. Siri.

- 4 If a facial recognition system is trained using data from only one race, it will
- a. work efficiently for everyone. b. become faster.
c. improve in translation. d. fail to recognize other races.
- 5 Siri is an example of:
- a. Image processing. b. A voice assistant based on AI.
c. A drawing program. d. An Internet browser.
- 6 Calculation in a neuron is performed by the formula: $(\text{Inputs} \times \text{Weights})$ +
- a. Output b. Activation
c. Ratio d. Bias
- 7 library is used for data processing and manipulation in Python.
- a. NumPy b. Matplotlib
c. Pandas d. Seaborn

2 Put (✓) or (X):

- 1 Machine learning is a branch of artificial intelligence that allows computers to learn from experience. ()
- 2 Artificial intelligence can understand sarcasm and emotions with the same accuracy as humans. ()
- 3 Part of the role of the smart user is critical thinking and verifying the accuracy of information. ()
- 4 Weights are always fixed values that do not change. ()
- 5 One of the practical applications of the artificial neuron is its use in diagnosing diseases in hospitals. ()
- 6 The `np.mean( )` function is used to find the smallest value in a list. ()
- 7 `pd.to_datetime( )` can reject invalid dates like "2023-13-01". ()
- 8 The `print()` function is used to display results on screen. ()

Answers

MODEL (1)

1 1 c 2 b 3 b 4 a
5 c 6 c 7 b

2 1 X 2 ✓ 3 X 4 ✓
5 ✓ 6 ✓ 7 ✓ 8 X

MODEL (2)

1 1 d 2 b 3 c 4 b
5 d 6 c 7 c

2 1 X 2 ✓ 3 ✓ 4 ✓
5 X 6 X 7 ✓ 8 X

MODEL (3)

1 1 b 2 b 3 c 4 c
5 d 6 b 7 a

2 1 ✓ 2 ✓ 3 ✓ 4 ✓
5 X 6 X 7 X 8 ✓

MODEL (4)

1 1 c 2 c 3 a 4 b
5 b 6 a 7 c

2 1 ✓ 2 X 3 ✓ 4 ✓
5 X 6 X 7 ✓ 8 ✓

MODEL (5)

1 1 d 2 d 3 c 4 d
5 b 6 d 7 c

2 1 ✓ 2 X 3 ✓ 4 X
5 ✓ 6 X 7 ✓ 8 ✓

كيفية طباعة صفحات معينة من ملف معين مثلا ازاي نطبع الصفحات من صفحة 4 الى صفحة 9



حمل الآن

مجانا وحصريا

المراجعة رقم (2)

اختبار شهر مارس



Unit Three: Artificial Intelligence

Lesson One: The Historical Development of Artificial Intelligence

★ **Have you ever wondered** how our smartphones became so smart that they understand what we say?

How can cars drive themselves without a human driver?

□ **All of this is thanks to the amazing technology called Artificial Intelligence (AI).**

But did you know that AI is **not a completely modern idea**?

In fact, it has developed over a **very long period of history**.

□ In this lesson, we will travel through time to discover the **roots of this great dream**.

🔗 What Will We Learn?

1. The Human Dream of Thinking Machines:

How did people's interest in automation begin in ancient times?

2. The Modern Age of Artificial Intelligence:

The key historical milestones that shaped today's AI world.

□ **First: Ancient Roots (Before Computers)**

📖 Long before computers were invented, humans dreamed of machines that could **think and act like people**.

✦ Ancient civilizations made early efforts that can be considered the **first roots of machine thinking**.

These efforts appeared in:

- Myths and legends
- Philosophy
- ⚙️ □ Early mechanical inventions

🚀 **Second: Major Historical Milestones**

□ A. Alan Turing – The Father of Artificial Intelligence (1950)

The British mathematician **Alan Turing** laid the foundation of AI by asking his famous question:

“Can machines think?”

🔍 **The Turing Test:**

A machine passes the test if it can convince a human, through text conversation, that it is also human.

B. Dartmouth Conference – The Official Birth (1956)

☀️ □ In the summer of 1956, scientists met at **Dartmouth College** in the USA.

✈️ During this meeting, the term “**Artificial Intelligence**” was officially introduced.

C. Years of Enthusiasm and Big Dreams (1956 – 1970)

Promising beginnings:

Early programs appeared, such as:

- **Logic Theorist:** Solved logical and mathematical problems.
- **General Problem Solver:** Solved problems step by step.

Early challenges:

Computers were very slow and had limited memory.

□ D. Expert Systems (1970 – 1980)

Instead of copying human thinking, scientists taught machines the **knowledge of experts**.

Example – MYCIN:

An expert system that helped doctors diagnose infectious diseases with accuracy close to human experts.

❄️ □ E. AI Winter (1980 – 1990)

Dreams faded for a while due to:

1. Over-promising results
2. High costs and technical limitations

Positive Message:

Sometimes failure helps us learn and become stronger! 💪

F. The Renaissance Era (1990 – 2010)

A major revival happened thanks to:

- 🌐 The Internet
- 📊 Big Data

□ Machine Learning:

Instead of programming every step, machines learn patterns from data (e.g., recognizing cats and dogs in images).



 Deep Blue:

A historic moment when a computer defeated the world chess champion **Garry Kasparov**.

 G. The Modern Revolution (2010 – Present) **Deep Learning:**

An advanced type of machine learning inspired by the neural networks of the human brain.

 AlphaGo:

A stunning victory over the world champion in the complex Chinese game **Go**.

A. True or False (8 Questions)

1. Artificial Intelligence is a very recent idea. ()
2. Ancient civilizations dreamed of thinking machines. ()
3. Alan Turing asked if machines can think. ()
4. The Turing Test uses voice communication. ()
5. The Dartmouth Conference was held in 1956. ()
6. Early computers were fast and powerful. ()
7. Expert systems depended on expert knowledge. ()
8. AlphaGo is related to chess. ()

B. Complete the Sentence (7 Questions)

1. Artificial Intelligence is often called _____.
a) IT b) AI c) CPU d) RAM
2. Alan Turing was a famous _____.
a) Doctor b) Engineer c) Mathematician d) Pilot
3. The term "Artificial Intelligence" appeared in _____.
a) 1950 b) 1956 c) 1960 d) 1970
4. MYCIN helped doctors in _____ diseases.
a) Heart b) Genetic c) Infectious d) Mental
5. AI Winter happened between _____.
a) 1960–1970 b) 1970–1980 c) 1980–1990 d) 1990–2000
6. Machine Learning depends on _____.
a) Rules only b) Data patterns c) Human feelings d) Manual control
7. AlphaGo is an example of _____.
a) Expert systems b) Deep learning c) AI winter d) Logic programs

A. True or False (8 Questions)

1. Artificial Intelligence aims to make machines think like humans. ()
2. Ancient myths were part of early ideas about intelligent machines. ()
3. Alan Turing introduced the term "Artificial Intelligence". ()
4. The Turing Test depends on text-based communication. ()
5. Early AI programs faced problems due to limited computer memory. ()
6. Expert systems were designed to learn like children. ()
7. Machine Learning allows machines to learn from data. ()
8. AlphaGo defeated the world champion in chess. ()

B. Complete the Sentence (7 Questions)

1. The main goal of Artificial Intelligence is to build _____ machines.
a) weak b) thinking c) broken d) manual
2. Philosophers contributed to AI through _____.
a) philosophy b) programming c) networking d) gaming
3. The Dartmouth Conference was held in the year _____.
a) 1950 b) 1956 c) 1965 d) 1975
4. MYCIN is an example of a(n) _____ system.
a) operating b) expert c) gaming d) learning
5. AI Winter occurred because of _____ promises.
a) realistic b) limited c) overestimated d) successful
6. Machine Learning works mainly by analyzing _____.
a) commands b) emotions c) patterns d) mistakes
7. Deep Learning is inspired by the _____.
a) computer screen b) neural networks of the brain
c) keyboard d) database

A. True or False (8 Questions)

1. The idea of intelligent machines appeared only after computers. ()
2. Early mechanical inventions supported the idea of automation. ()
3. Alan Turing asked whether machines can think. ()
4. The Dartmouth Conference took place in Europe. ()
5. Logic Theorist was an early AI program. ()
6. Expert systems depend on random learning. ()
7. The Internet helped the growth of Artificial Intelligence. ()
8. AlphaGo is an example of Deep Learning. ()

B. Complete the Sentence (7 Questions)

1. Artificial Intelligence developed over a long period of _____.
a) weeks b) history c) experiments d) devices
2. The Turing Test checks if a machine can act like a _____.
a) robot b) animal c) human d) computer
3. Early AI systems were limited because computers were _____.
a) fast b) powerful c) slow d) modern
4. MYCIN was used in the field of _____.
a) engineering b) education c) medicine d) agriculture
5. Machine Learning reduces the need for detailed _____.
a) hardware b) programming c) electricity d) storage
6. Deep Blue became famous after defeating a _____ champion.
a) tennis b) chess c) football d) boxing
7. AlphaGo uses advanced _____ techniques.
a) manual b) deep learning c) simple logic d) typing

□ Unit Three: Artificial Intelligence

Lesson Two: How Do Machines Think and Change Our World?

★ **Have you ever noticed** that your phone suggests a song without you asking?

Or that an educational app knows exactly which topics you need help with?

✦ This is not magic — it is the **power of Artificial Intelligence (AI)**, the amazing technology that enables machines to **act, respond, and interact intelligently**, in ways that simulate human intelligence.

🔗 Where Do We Find Artificial Intelligence?

📱 On Your Phone

Voice assistants, face recognition, and text prediction.

🎮 In Games

Smart characters that interact with you and adapt to your playing style.

🌐 On the Internet

Intelligent search engines and personalized content recommendations.

💡 What Is Artificial Intelligence?

□ **Artificial Intelligence** is the ability of machines to **think**, make decisions, and solve problems.

Scientifically, AI is defined as the ability of computer systems to **simulate human cognitive abilities**, such as:

- 📊 Learning from data
- ⚖️ □ Decision-making
- li>• □ Problem-solving
- li>• 🗣️ □ Understanding natural language
- li>• 👁️ □ Recognizing patterns in images and sounds

□ A Deeper Understanding of AI

🧠 Imagine that we are building a **digital brain** for a machine.

This brain has **no emotions or self-awareness** like the human brain, but it is designed to **process huge amounts of information at incredible speed**.



Examples from Daily Life

1. Video Games

Non-Playable Characters (NPCs) use AI to choose the best strategy for attack or escape, and they **learn from your playing style** to become more challenging.

2. Voice Assistants

Such as **Siri, Alexa, and Google Assistant**.

They use **Natural Language Processing (NLP)** to understand your speech, convert it into text, analyze meaning, and perform your request.

Comparison: Human Intelligence vs Artificial Intelligence

Aspect	Human Intelligence 	Artificial Intelligence 
Emotions & Awareness	Has emotions and self-awareness	No emotions or awareness, processes data only
Creativity	Creates new and original ideas	Extremely fast and accurate in data processing
Understanding Context	Understands humor and hidden meanings	Relies on logic and programmed rules

Example:

If you show a painting to an AI, it can identify colors, lines, and people accurately, but it **cannot feel the beauty or emotion** expressed by the artist.

Why Is AI Important Today?

Because it is a powerful force that opens doors we never imagined:

-  **Language Models Revolution:** Tools like ChatGPT help with conversations and homework.
-  **Image Recognition:** Unlocking phones using face recognition.
-  **Self-Driving Cars:** Vehicles that drive safely on their own.

A. True or False (8)

1. Artificial Intelligence is a form of magic. ()
2. AI allows machines to make decisions. ()
3. AI can recognize patterns in images. ()
4. Voice assistants do not use AI. ()
5. AI has emotions like humans. ()
6. NPCs can adapt to the player's style. ()
7. AI can process large amounts of data quickly. ()
8. AI understands feelings naturally. ()

B. Complete the Sentence (7)

Choose the correct answer:

1. Artificial Intelligence enables machines to _____.
a) sleep b) think c) feel d) dream
2. Face recognition is an example of _____.
a) gaming b) image recognition c) emotions d) art
3. Voice assistants use _____ to understand speech.
a) hardware b) NLP c) RAM d) cables
4. AI characters in games are called _____.
a) CPUs b) NPCs c) URLs d) APIs
5. AI systems learn mainly from _____.
a) guesses b) data c) feelings d) luck
6. AI processes information with high _____.
a) fear b) speed c) noise d) delay
7. ChatGPT is an example of a _____ model.
a) language b) image c) hardware d) storage

A. True or False (8)

1. AI can suggest content based on user behavior. ()
2. Educational apps never use AI. ()
3. AI simulates human cognitive abilities. ()
4. AI systems can learn from data. ()
5. AI understands emotions better than humans. ()
6. AI is used in internet search engines. ()
7. AI has self-awareness. ()
8. AI can analyze language. ()

B. Complete the Sentence (7)

1. Artificial Intelligence helps machines _____ problems.
a) ignore b) solve c) hide d) forget
2. Learning from data is a key feature of _____.
a) AI b) art c) music d) hardware
3. NPCs are commonly found in _____.
a) phones b) games c) cars d) books
4. AI decisions depend mainly on _____.
a) emotions b) logic c) dreams d) fear
5. NLP helps machines understand _____.
a) numbers b) language c) images d) speed
6. AI can analyze _____ amounts of information.
a) tiny b) huge c) random d) weak
7. Self-driving cars depend on _____.
a) AI b) paint c) fuel only d) drivers

A. True or False (8)

1. AI is used in smartphones. ()
2. AI can predict text. ()
3. AI has emotions like humans. ()
4. AI can recognize faces. ()
5. AI works without data. ()
6. AI helps personalize content. ()
7. AI understands sarcasm perfectly. ()
8. AI supports decision-making. ()

B. Complete the Sentence (7)

1. AI systems rely mainly on _____.
a) feelings b) data c) opinions d) luck
2. Text prediction is found in _____.
a) notebooks b) smartphones c) paintings d) radios
3. AI does not have _____.
a) speed b) accuracy c) emotions d) memory
4. Voice assistants convert speech into _____.
a) images b) text c) video d) signals
5. AI can help in _____ learning.
a) random b) personalized c) slow d) manual
6. AI characters become stronger by _____.
a) copying b) learning c) resting d) guessing
7. Image recognition is used to unlock _____.
a) doors b) phones c) books d) bags

A. True or False (8)

1. AI can interact intelligently with humans. ()
2. AI thinks exactly like humans. ()
3. AI is used in games and phones. ()
4. AI cannot solve problems. ()
5. AI processes data very quickly. ()
6. AI understands hidden emotions. ()
7. AI supports self-driving cars. ()
8. AI depends on programmed rules and data. ()

B. Complete the Sentence (7)

1. AI allows machines to make _____.
a) mistakes b) decisions c) jokes d) feelings
2. Personalized content is powered by _____.
a) AI b) paper c) electricity d) art
3. AI assistants respond to _____ commands.
a) visual b) voice c) touch only d) random
4. AI does not possess _____.
a) speed b) logic c) awareness d) accuracy
5. AI processes data at _____ speed.
a) slow b) human c) incredible d) weak
6. Image recognition helps identify _____.
a) faces b) sounds c) feelings d) smells
7. Self-driving cars are an example of _____.
a) AI applications b) games c) art d) myths

Unit Three: Artificial Intelligence

Lesson Three: Artificial Intelligence All Around Us

Ethical Responsibility and Safe Use

With Great Power Comes Great Responsibility

Artificial Intelligence is a powerful force that can change the world for the better, but it must be used **wisely and responsibly** to ensure **safety and benefit for everyone**.

Core Ethical Principles

1. Fairness and Transparency

AI systems should be designed in a **fair and unbiased way**, treating all individuals equally without discrimination.

2. Privacy and Data Protection

Your personal information must remain **safe and protected**.

💡 *Tip:* Always read privacy settings before using any application.

3. Human Oversight and Control

AI is a **tool**, not a decision-maker by itself.

Humans set the goals, design the algorithms, and remain responsible for outcomes.

The Problem of Bias in Artificial Intelligence

If an AI system is trained on **incomplete or unfair data**, it may **learn bias**.

Example:

If a system is trained mainly on faces from one ethnic group, it may fail to recognize faces from other groups accurately.

Solution:

High-quality, fair, and diverse data is the key to **justice and equality**.

Your Role as a Smart User

✓ **Think critically:** Do not automatically trust everything AI produces.

✓ **Verify information:** Always check reliable sources.

✓ **Use responsibly:** Guide technology to improve your life and the lives of others.

A. True or False (8)

1. Artificial Intelligence must always be used responsibly. ()
2. AI systems should treat all people equally. ()
3. Privacy is not important when using AI applications. ()
4. Humans control and supervise AI systems. ()
5. Bias can appear due to poor data. ()
6. AI systems always make fair decisions. ()
7. Users should verify AI information. ()
8. AI can change the world positively. ()

B. Complete the Sentence (7)

1. Ethical AI systems must be _____.
a) secret b) fair c) random d) weak
2. Personal data should be kept _____.
a) public b) open c) safe d) ignored
3. Bias occurs when data is _____.
a) diverse b) fair c) limited d) balanced
4. Humans are responsible for _____ AI systems.
a) designing b) obeying c) ignoring d) copying
5. Reading privacy settings helps protect _____.
a) devices b) batteries c) personal information d) screens
6. AI decisions depend mainly on _____.
a) emotions b) algorithms c) dreams d) luck
7. Responsible AI use improves _____.
a) problems b) harm c) life d) bias

A. True or False (8)

1. AI systems must be transparent. ()
2. Privacy protection is optional. ()
3. Bias can affect AI results. ()
4. AI replaces human responsibility completely. ()
5. Data quality affects AI fairness. ()
6. Users should think critically about AI outputs. ()
7. AI should be used safely. ()
8. AI tools cannot make mistakes. ()

B. Complete the Sentence (7)

1. Ethical AI focuses on fairness and _____.
a) speed b) transparency c) power d) cost
2. AI bias is learned from _____ data.
a) diverse b) unfair c) rich d) complete
3. Humans must _____ AI systems.
a) supervise b) fear c) avoid d) forget
4. Personal information must be _____.
a) deleted b) protected c) shared d) lost
5. AI should improve the lives of _____.
a) machines b) developers c) people d) robots
6. A smart user always _____ information.
a) ignores b) trusts c) verifies d) deletes
7. Diverse data leads to more _____ AI systems.
a) biased b) accurate c) unfair d) weak

A. True or False (8)

1. AI is a powerful technology. ()
2. AI can be used without rules. ()
3. Bias reduces AI accuracy. ()
4. Human oversight is necessary. ()
5. AI systems can reflect data problems. ()
6. Privacy protects personal data. ()
7. AI is always neutral. ()
8. Responsible use benefits society. ()

B. Complete the Sentence (7)

1. AI systems must follow _____ principles.
a) ethical b) electrical c) mechanical d) visual
2. Poor data can cause AI _____.
a) balance b) bias c) speed d) safety
3. Human control keeps AI _____.
a) dangerous b) safe c) hidden d) slow
4. Personal data should not be _____.
a) protected b) secured c) exposed d) encrypted
5. A smart user does not blindly _____ AI.
a) question b) trust c) design d) improve
6. AI fairness depends on data _____.
a) quantity b) diversity c) color d) size
7. Ethical AI helps build a _____ society.
a) weak b) harmful c) better d) biased

A. True or False (8)

1. AI must be used wisely. ()
2. Fairness is an ethical AI principle. ()
3. AI bias comes from diverse data. ()
4. Humans design AI algorithms. ()
5. Privacy settings are important. ()
6. AI systems are independent of humans. ()
7. Users should guide AI positively. ()
8. Ethical AI protects everyone. ()

B. Complete the Sentence (7)

1. Ethical responsibility ensures AI _____.
a) harm b) safety c) chaos d) bias
2. AI should not discriminate against _____.
a) data b) individuals c) machines d) systems
3. Bias occurs when data is not _____.
a) fair b) slow c) small d) encrypted
4. Humans remain _____ for AI decisions.
a) absent b) responsible c) replaced d) silent
5. Protecting data ensures user _____.
a) speed b) comfort c) privacy d) cost
6. Responsible users always _____ information.
a) ignore b) verify c) delete d) hide
7. AI projects should aim to _____ problems.
a) create b) solve c) increase d) repeat

□ Unit Three: Artificial Intelligence

Lesson Four: The Artificial Neuron

How Does a Machine Imitate the Human Mind?

💡 First: What Is an Artificial Neuron?

- An **artificial neuron** is a small unit inside a computer that tries to **imitate the way humans think**.
- Just as our brains contain neurons that help us learn and make decisions, scientists created **programmed neurons** that help computers “*think*” and decide.

📁 □ Second: Components of the Artificial Neuron

An artificial neuron consists of **five main parts**:

1 □ Inputs

⬇ The information entering the neuron (image, sound, or number).

2 □ Weights

⚖ □ Numbers that determine the **importance** of each input.

3 □ Bias

⊕ An additional value added to adjust the neuron’s behavior and make it more flexible.

💡 **Example:** Extra marks or “class activities” added to help a student pass.

4 □ Activation Function

🔔 The decision-maker:

Should the neuron send a signal or stay silent?

Q Types of Activation Functions (The Magic Key)

Function	Simple Role	Practical Example
Threshold	Gives only (0 or 1)	Pass (1) or Fail (0)
Sigmoid	Gives a value between 0 and 1	85% chance the image is a cat
ReLU	Passes positive values, removes negative ones	Ignoring very weak sounds

5 Output

⬆ The final result and decision made by the neuron.

34 Practical Example: Calculating Your School Result

📖 Imagine an artificial neuron calculating your result based on **three subjects**:

(Science – Math – Computer)

◆ **Inputs** : Your grades in the subjects.

◆ **Weights** : Science (0.4) – Math (0.3) – Computer (0.3)

◆ **Bias** : +1 attendance mark

□ Step 1: Weighted Score

Weighted Score =

$$(\text{Science} \times 0.4) + (\text{Math} \times 0.3) + (\text{Computer} \times 0.3)$$

□ Step 2: Add Bias

Final Result = Weighted Score + 1

▬ □ Example Calculation

Grades:

Science = 85, Math = 90, Computer = 80

Weighted Score =

$$(85 \times 0.4) + (90 \times 0.3) + (80 \times 0.3)$$

$$= 34 + 27 + 24 = \mathbf{85}$$

Final Result =

$$85 + 1 = \mathbf{86}$$

✓ Just like an artificial neuron makes decisions!



A. True or False (8)

1. An artificial neuron imitates human thinking. ()
2. Inputs can be images, sounds, or numbers. ()
3. Weights show the importance of inputs. ()
4. Bias reduces flexibility of the neuron. ()
5. Activation functions make decisions. ()
6. Output is the final result. ()
7. ReLU passes negative values only. ()
8. Artificial neurons exist inside computers. ()

B. Complete the Sentence (7)

1. An artificial neuron is a _____ unit.
a) biological b) software c) mechanical d) electrical
2. Weights determine the _____ of each input.
a) color b) importance c) size d) speed
3. Bias makes the neuron more _____.
a) rigid b) flexible c) slow d) noisy
4. The activation function decides whether to _____ a signal.
a) store b) ignore c) send d) delete
5. Threshold function outputs _____.
a) values only b) 0 or 1 c) text d) images
6. Sigmoid outputs a value between _____.
a) 1 and 10 b) 0 and 1 c) -1 and 1 d) 0 and 100
7. Output represents the _____ decision.
a) first b) final c) random d) partial

A. True or False (8)

1. Artificial neurons are inspired by the human brain. ()
2. Inputs must always be numbers. ()
3. Bias is added to the total value. ()
4. Activation functions control neuron behavior. ()
5. ReLU removes negative values. ()
6. Output comes before activation. ()
7. Weights affect calculations. ()
8. Artificial neurons cannot make decisions. ()

B. Complete the Sentence (7)

1. Artificial neurons help computers _____.
a) sleep b) think c) feel d) dream
2. Inputs enter the neuron through _____.
a) outputs b) signals c) data d) rules
3. Bias is similar to extra _____ for students.
a) exams b) marks c) books d) lessons
4. ReLU ignores _____ values.
a) positive b) negative c) large d) correct
5. Activation functions are the neuron's _____.
a) memory b) brain c) decision tool d) storage
6. The final result is called the _____.
a) input b) output c) bias d) weight
7. Weighted score depends on _____ and inputs.
a) time b) weights c) colors d) screens

A. True or False (8)

1. Artificial neurons copy biological neurons exactly. ()
2. Inputs provide data to the neuron. ()
3. Weights can change the result. ()
4. Bias always decreases the score. ()
5. Sigmoid gives probabilities. ()
6. ReLU is an activation function. ()
7. Output is the neuron's decision. ()
8. Artificial neurons cannot learn. ()

B. Complete the Sentence (7)

1. Artificial neurons are part of _____ systems.
a) AI b) biology c) chemistry d) physics
2. Inputs can be _____.
a) grades b) images c) sounds d) all of these
3. Weights are represented by _____.
a) words b) numbers c) colors d) signals
4. Bias is added to the _____.
a) output b) input c) total d) memory
5. Threshold function gives _____ result.
a) many b) continuous c) binary d) random
6. ReLU passes only _____ values.
a) negative b) positive c) equal d) small
7. The neuron's final answer is called _____.
a) weight b) bias c) output d) input

A. True or False (8)

1. Artificial neurons are used in AI systems. ()
2. Bias increases neuron flexibility. ()
3. Weights are optional in neurons. ()
4. Activation functions help in decision-making. ()
5. Output comes after activation. ()
6. Sigmoid produces values above 1. ()
7. ReLU removes negative inputs. ()
8. Artificial neurons help machines decide. ()

B. Complete the Sentence (7)

1. Artificial neurons imitate the _____ brain.
a) animal b) human c) robot d) digital
2. Inputs enter the neuron before _____.
a) output b) activation c) decision d) memory
3. Weights control the _____ of inputs.
a) order b) importance c) color d) type
4. Bias is added to adjust the _____.
a) speed b) behavior c) screen d) size
5. Activation functions decide whether to _____.
a) send a signal b) stop learning c) store data d) erase memory
6. Sigmoid outputs a _____ value.
a) binary b) fixed c) probability d) random
7. The final neuron decision is the _____.
a) input b) output c) weight d) bias

🌐 Lesson Five: The Role of the Artificial Neuron in Artificial Intelligence

From a Single Neuron to Giant Networks

🏠 □ How Do We Build an Artificial Neuron?

The artificial neuron is the basic building block of Artificial Neural Networks (ANNs).

To build it, we follow organized steps:

1. **Identifying the type of data:** such as numbers, images, or text.
2. **Assigning weights:** giving each piece of information a certain importance.
3. **Summation and processing:** adding the inputs after multiplying them by their weights.
4. **Activation:** passing the result through an activation function to make a decision.
5. **Final output:** obtaining a prediction (for example: "This is a cat image").

□ How Does the Neuron Work? (The Cat Example)

Imagine you are designing a system to recognize cat images:

- **Input:** the image is entered into the system.
- **Analysis:** the neuron analyzes image features using weights.
- **Decision:** the activation function decides whether the features match a cat (Yes / No).
- **Communication:** the result is sent to other neurons in the network to confirm the decision.

When thousands of neurons are connected together, we get a powerful neural network that can:

1. Learn from experience.
2. Improve itself over time.
3. Solve complex problems such as self-driving cars or medical diagnosis.

🚀 Amazing Real-Life Applications

- **Smart assistants:** such as Siri and Alexa to understand speech.
- **Face recognition:** in smartphone cameras.
- **Self-driving cars:** to make driving decisions instead of humans.
- **Instant translation:** converting languages in seconds.
- **Medicine:** diagnosing diseases accurately in hospitals.
- **Entertainment:** recommending movies you like on YouTube or Netflix.

 Model (1)**A) True or False (8)**

1. The artificial neuron is the basic unit of neural networks. ()
2. Inputs can be numbers, images, or text. ()
3. Weights give importance to input data. ()
4. The activation function is not needed in AI systems. ()
5. The output is the final prediction of the neuron. ()
6. Neural networks consist of only one neuron. ()
7. Artificial neurons can communicate with other neurons. ()
8. Neural networks can learn from experience. ()

B) Choose the correct answer (7)

1. The step that decides Yes or No is:
(a) Input (b) Weight (c) Activation (d) Output
2. Which is an example of input data?
(a) Decision (b) Image (c) Prediction (d) Output
3. Many connected neurons form a:
(a) File (b) Neural network (c) Website (d) Folder
4. Siri and Alexa are examples of:
(a) Games (b) Smart assistants (c) Cameras (d) Cars
5. The process of adding inputs after weights is called:
(a) Activation (b) Summation (c) Output (d) Storage
6. Neural networks improve themselves through:
(a) Forgetting (b) Experience (c) Deleting data (d) Errors
7. Recognizing cat images is an example of:
(a) Programming only (b) Image recognition (c) Translation (d) Encryption

 Model (2)**A) True or False (8)**

1. Artificial neurons analyze data using weights. ()
2. All inputs have the same importance. ()
3. The activation function helps in decision making. ()
4. Neural networks cannot solve complex problems. ()
5. Thousands of neurons can be connected together. ()
6. AI is used in face recognition systems. ()
7. Self-driving cars depend on neural networks. ()
8. Artificial intelligence has no medical uses. ()

B) Choose the correct answer (7)

1. The final result of a neuron is called:
(a) Input (b) Weight (c) Output (d) Data
2. Which application uses AI in hospitals?
(a) Gaming (b) Translation (c) Medical diagnosis (d) Music
3. The importance given to data is called:
(a) Input (b) Weight (c) Output (d) Network
4. Passing the result to make a decision is called:
(a) Summation (b) Activation (c) Storage (d) Input
5. Netflix movie suggestions are related to:
(a) Medicine (b) Entertainment (c) Driving (d) Security
6. A neural network becomes stronger when it:
(a) Stops learning (b) Learns from data
(c) Deletes neurons (d) Ignores input
7. The lesson explains neuron work using a:
(a) Car example (b) Cat image example
(c) Phone example (d) Robot example

 Model (3)**A) True or False (8)**

1. Artificial neurons are inspired by the human brain. ()
2. Data must pass through weights before processing. ()
3. The activation function gives random results. ()
4. Neural networks can be used in translation apps. ()
5. The output can be a prediction or decision. ()
6. AI systems cannot improve over time. ()
7. Face recognition uses artificial neurons. ()
8. Neural networks help solve complex problems. ()

B) Choose the correct answer (7)

1. Which is NOT an input type?
(a) Image (b) Text (c) Number (d) Decision
2. The basic building block of neural networks is:
(a) Program (b) Artificial neuron (c) Website (d) File
3. Making driving decisions without humans relates to:
(a) Smart assistants (b) Self-driving cars (c) Translation (d) Gaming
4. The step after summation is:
(a) Input (b) Activation (c) Storage (d) Deletion
5. AI translation converts languages in:
(a) Days (b) Weeks (c) Seconds (d) Months
6. Improving performance over time is called:
(a) Forgetting (b) Learning (c) Deleting (d) Stopping
7. YouTube recommendations depend on:
(a) Artificial intelligence (b) Manual work
(c) Paper data (d) Human guessing

Lesson Six: Introduction to Data Analysis Using Python

□ Concept of Data Analysis and Its Importance

Data analysis is the process of examining, cleaning, and transforming data in order to extract useful information and make fact-based decisions.

1. Why Do We Use Python?

Python is considered one of the best languages for data analysis for the following reasons:

- **Easy to learn:** Its syntax is simple and close to the English language.
- **Powerful libraries:**
 - **Pandas:** for data processing and cleaning.
 - **NumPy:** for scientific and mathematical calculations.
 - **Matplotlib and Seaborn:** for data visualization (charts and graphs).
- **Large community support:** many tutorials and learning resources are available.
- **Artificial Intelligence:** fully compatible with AI and Machine Learning techniques.

1.2 Basic Concepts in Data Analysis

A. Mean (Average)

The mean is the sum of values divided by their count.

Python Example:

```
import numpy as np
data = [10, 20, 30, 40, 50]
mean = np.mean(data)
print("Mean:", mean) # Output: 30.0
```

★ First: Importing the NumPy Library

```
import numpy as np
```

Function:

- Imports the NumPy library, which is used for scientific and mathematical calculations in Python.

Note:

-  as np is a shortcut name so we can use np instead of writing numpy every time.

Example without shortcut:

```
import numpy  
mean = numpy.mean(data)
```

★ Second: Creating the Data List

```
data = [10, 20, 30, 40, 50]
```

Function:

- Creates a list containing the values we want to analyze.

Note:

- The list can contain any numbers and does not need to be ordered.

★ Third: Calculating the Mean Using NumPy

```
mean = np.mean(data)
```

Function:

- `np.mean()` is a built-in function in NumPy used to calculate the mean.

□ How Does the Mean Work?

Mean = Sum of values ÷ Number of values

Example:

$$(10 + 20 + 30 + 40 + 50) \div 5 = 150 \div 5 = 30.0$$

★ Manual Example Without NumPy

```
sum_data = sum(data)  
count = len(data)  
mean = sum_data / count
```

★ Fourth: Printing the Result

```
print("Mean:", mean)
```

Output:

Mean: 30.0

Important Note:

- The result is of type **float**, even if the value is a whole number.

B. Maximum and Minimum Values (Max & Min)

- **Maximum (Max):** the largest value in the data set.
- **Minimum (Min):** the smallest value in the data set.

Example:

```
maximum = np.max(data)
minimum = np.min(data)
print("Maximum value:", maximum)
print("Minimum value:", minimum)
```

Types of Data That Can Be Analyzed

1. **Numerical Data:** integers (age) or decimals (price).
2. **Text Data:** such as customer reviews, analyzed using NLP techniques.
3. **Date and Time Data:** purchase dates or event times.

Working with Dates Using Pandas

We use `pd.to_datetime()` to convert text into real date objects.

Example:

```
import pandas as pd
dates = ["2023-01-01", "2023-01-02", "2023-01-03"]
date_series = pd.to_datetime(dates)
print(date_series)
```

Code Explanation

Importing Pandas

```
import pandas as pd
```

- `pd` is a shortcut for the Pandas library.

Creating a List of Dates

```
dates = ["2023-01-01", "2023-01-02", "2023-01-03"]
```

- Dates are written as text using the format: **YYYY-MM-DD**

Converting Text to DateTime

```
date_series = pd.to_datetime(dates)
```

- Converts text dates into real DateTime objects.
- Allows:
 - Extracting day, month, and year
 - Calculating time differences
 - Filtering by date



Printing the Result

```
print(date_series)
```

Expected Output:

```
DatetimeIndex(['2023-01-01', '2023-01-02', '2023-01-03'],  
dtype='datetime64[ns]', freq=None)
```

? Why Do We Use `pd.to_datetime()`?

Because it allows us to:

- Calculate time differences between dates
- Extract date parts (day, month, year)
- Group data by date
- Validate date formats

★ Important Note

Data analysis helps extract insights and make better decisions.

Python is an ideal language for data analysis because of:

- Its simplicity
- Its specialized libraries like **Pandas** and **NumPy**

 Model (1)**A) True or False (8)**

1. Data analysis helps in making fact-based decisions. ()
2. Python is difficult to learn for beginners. ()
3. NumPy is used for mathematical calculations. ()
4. Pandas is used for data cleaning. ()
5. The mean is the largest value in data. ()
6. The result of np.mean() is usually a float. ()
7. Dates cannot be analyzed in Python. ()
8. pd.to_datetime() converts text to dates. ()

B) Choose the correct answer (7)

1. The library used for averages is:
(a) Pandas (b) NumPy (c) Seaborn (d) Matplotlib
2. Mean equals:
(a) $\text{Max} \div \text{Min}$ (b) $\text{Sum} \div \text{Count}$ (c) $\text{Count} \div \text{Sum}$ (d) $\text{Max} + \text{Min}$
3. Which data type represents age?
(a) Text (b) Numerical (c) Date (d) Image
4. np.max() returns the:
(a) Smallest value (b) Average (c) Largest value (d) Count
5. pd is a shortcut for:
(a) NumPy (b) Pandas (c) Python (d) Data
6. Date format YYYY-MM-DD represents:
(a) Day-Month-Year (b) Year-Month-Day
(c) Month-Day-Year (d) Random
7. Data visualization means:
(a) Cleaning data (b) Drawing charts
(c) Deleting data (d) Encrypting data

 Model (2)**A) True or False (8)**

1. Python supports AI and machine learning. ()
2. Lists must be ordered to calculate the mean. ()
3. Matplotlib is used for charts. ()
4. Mean can be calculated manually. ()
5. Text data cannot be analyzed. ()
6. NumPy uses ready-made functions. ()
7. DateTime data helps in time analysis. ()
8. Pandas has no role in data analysis. ()

B) Choose the correct answer (7)

1. Which library handles dates?
(a) NumPy (b) Pandas (c) Seaborn (d) Math
2. The smallest value is called:
(a) Max (b) Mean (c) Min (d) Sum
3. AI compatibility is a feature of:
(a) Java (b) Python (c) HTML (d) CSS
4. sum(data) returns the:
(a) Count (b) Average (c) Total (d) Max
5. Customer reviews are:
(a) Numerical data (b) Text data (c) Date data (d) Image data
6. to_datetime() is used to:
(a) Delete dates (b) Convert text to dates
(c) Draw charts (d) Count values
7. Data analysis extracts:
(a) Errors (b) Games (c) Insights (d) Viruses

 Model (3)**A) True or False (8)**

1. Python syntax is similar to English. ()
2. Mean is always an integer. ()
3. NumPy is imported using np. ()
4. DateTime objects allow time calculations. ()
5. Data analysis is useless without Python. ()
6. Pandas is powerful for handling data. ()
7. Min represents the lowest value. ()
8. Visualization helps understand data. ()

B) Choose the correct answer (7)

1. Which is NOT a Python library?
(a) NumPy (b) Pandas (c) Seaborn (d) Excel
2. Mean is calculated using:
(a) np.mean() (b) np.max() (c) np.min() (d) len()
3. Which data uses NLP?
(a) Numbers (b) Images (c) Text (d) Dates
4. Date data example:
(a) Price (b) Age (c) Purchase date (d) Name
5. The output of mean(10,20,30) is:
(a) 20 (b) 30 (c) 10 (d) 15
6. Pandas shortcut is:
(a) np (b) pd (c) py (d) ds
7. Data analysis supports:
(a) Guessing (b) Random decisions
(c) Fact-based decisions (d) Ignoring data

 Model (4)**A) True or False (8)**

1. Data can be numbers, text, or dates. ()
2. NumPy cannot calculate max values. ()
3. Python is widely used in data science. ()
4. Mean equals total divided by count. ()
5. DateTime data cannot be filtered. ()
6. Pandas helps handle time data. ()
7. Float numbers contain decimals. ()
8. Python has strong community support. ()

B) Choose the correct answer (7)

1. Which function finds the minimum value?
(a) np.mean() (b) np.min() (c) np.max() (d) sum()
2. The result type of mean is usually:
(a) int (b) str (c) float (d) bool
3. Charts are created using:
(a) NumPy (b) Pandas (c) Matplotlib (d) Math
4. Which is numerical data?
(a) Comment (b) Name (c) Age (d) Date
5. Python libraries make data analysis:
(a) Harder (b) Slower (c) Easier (d) Impossible
6. Dates written as text are called:
(a) Numbers (b) Strings (c) Floats (d) Lists
7. Data analysis goal is to:
(a) Hide information (b) Extract useful information
(c) Delete data (d) Encrypt data

حمل الآن

مجاناً وحصرياً

المراجعة رقم (3)

اختبار شهر مارس



Exercises

Put (✓) or (X)

1. The idea of Artificial Intelligence is a very modern concept that emerged in only the last few years.
2. The concept of Artificial Intelligence faced many challenges in its early stages.
3. The Turing Test is a method used to determine if a machine can successfully simulate human thinking.
4. Machine Learning is a branch of Artificial Intelligence that allows computers to learn from experience.
5. Artificial Intelligence is used only in games and entertainment.
6. Deep Learning is an advanced type of Machine Learning.
7. Artificial Intelligence will be an auxiliary tool in many future jobs.
8. Machine Learning is defined as teaching the machine how to learn by itself from data instead of programming it with direct knowledge.
9. MYCIN, the robot doctor, is one of the most famous expert systems, acting as a program that helps doctors diagnose infectious diseases.
10. Following the Dartmouth Conference, scientists began creating the first Artificial Intelligence programs.
11. Computers cannot be fed images and are unable to learn through those models because they cannot detect patterns.
12. The computer was unable to defeat players in the Chinese game AlphaGo.
13. Artificial Intelligence cannot distinguish between images.
14. Deep Learning mimics thinking as a network of interconnected neurons, where each cell receives and sends signals.
15. With the emergence of the Internet, scientists gained access to massive amounts of data to develop Machine Learning.
16. Artificial Intelligence cannot be used in smartphones.
17. Self-driving cars rely heavily on Artificial Intelligence.
18. Artificial Intelligence provides players with personalized tips to improve their performance in electronic gaming.
19. Artificial Intelligence can feel human emotions exactly like humans.
20. Artificial Intelligence relies only on data processing without self-awareness.
21. Characters in video games can learn from the user's playing style.
22. Human intelligence possesses creativity, while Artificial Intelligence imitates and does not innovate.
23. Phone cameras that automatically enhance photos utilize Artificial Intelligence techniques.

- 24.** ChatGPT can conduct long conversations and write essays to assist with school homework.
- 25.** It is difficult to use Artificial Intelligence techniques in smart vacuum cleaners.
- 26.** A key feature of Artificial Intelligence is its ability to process huge amounts of data in seconds and execute complex tasks with extreme accuracy.
- 27.** Artificial Intelligence enables smart devices to control lighting with high precision.
- 28.** Siri and Alexa use Natural Language Processing (NLP) techniques to understand speech, convert voice to text, analyze requests, and answer questions.
- 29.** Artificial Intelligence can recognize images and assist in unlocking smartphones via face recognition.
- 30.** Artificial Intelligence can learn, think, and make decisions exactly like humans.
- 31.** One of the concerns regarding AI tools is that they may be used unethically.
- 32.** Artificial Intelligence must be designed to be fair and equitable for everyone.
- 33.** No one has the right to use your personal data without your consent.
- 34.** Artificial Intelligence can make life-changing decisions better than humans.
- 35.** Humans are the final decision-makers because they possess ethics and consciousness.
- 36.** Bias in Artificial Intelligence may occur due to incomplete or unfair data.
- 37.** It is safe to trust all Artificial Intelligence results without verifying them.
- 38.** Using Artificial Intelligence to improve the lives of others is considered responsible use.
- 39.** Face recognition is not affected by the quality of data used in training.
- 40.** Part of the smart user's role is critical thinking and verifying the accuracy of information.
- 41.** The proposed student project, "The Little AI Innovator," encourages finding solutions to real-world problems using AI.
- 42.** Artificial Intelligence is a power with immense capabilities that can change the world for the better, but we must use it wisely and with ethical responsibility to ensure benefit and security for all.
- 43.** Social intelligence understands complex social and cultural contexts and has the capacity for empathy.
- 44.** If Artificial Intelligence is trained to recognize faces using data primarily containing people of a certain race, it may find it difficult to accurately recognize faces of people from other races.
- 45.** The "Little AI Innovator" project helps students think of AI-based solutions to solve simple problems.
- 46.** Artificial Intelligence should make critical decisions, such as crucial medical decisions, judicial rulings, or national security decisions, to ensure accuracy and neutrality.

- 47.** Artificial Intelligence relies on algorithms for thinking and analysis to solve problems.
- 48.** An artificial neuron attempts to mimic the function of neurons in the human brain.
- 49.** Weights in a neuron do not affect the final decision.
- 50.** Bias helps the neuron provide results even in the absence of inputs.
- 51.** The activation function is responsible for the neuron's final decision.
- 52.** The Threshold function provides values only between 0 and 1.
- 53.** The Sigmoid function is used to provide a probability or a percentage.
- 54.** Inputs can be images, sounds, or numbers.
- 55.** Without the activation function, the neuron will not be able to make a decision.
- 56.** Weights are always fixed values that do not change.
- 57.** Bias does not play any role in adjusting the performance of the neuron.
- 58.** Bias is a number added to the total to adjust the neuron's operation.
- 59.** Weights are used in the neuron to determine the importance of each piece of input information.
- 60.** The ReLU function focuses only on positive values and ignores weak values.
- 61.** The activation function acts as a switch that turns the neuron on or off.
- 62.** Results are the output of the neuron; they represent the final decision of the cell's operation.
- 63.** An artificial neuron cannot learn, think, or make decisions.
- 64.** The output of an artificial neuron can be calculated according to the process: $(\text{Inputs} \times \text{Weights} + \text{Bias})$.
- 65.** The artificial neuron is the foundation upon which the structure of artificial neural networks is built.
- 66.** Artificial neurons are used only for language translation and weather prediction, and are not used in image recognition.
- 67.** The type of input data, such as numbers or images, must be determined as a first and necessary step for building an artificial neuron.
- 68.** The step immediately preceding passing the result to the activation function is giving each input a weight.
- 69.** The final goal of a neuron's operation is to obtain the final output, represented by a decision or prediction.
- 70.** The activation function is what analyzes the image using weights in the cat recognition example.
- 71.** One of the real-life applications of artificial neurons is their use in diagnosing diseases in hospitals.

- 72.**When linking thousands of neurons together, the network loses its ability to learn from experiences and improve itself over time.
- 73.**Self-driving cars are not considered among the complex problems that powerful neural networks can solve.
- 74.**Smart cameras that recognize faces are an example of a real-life application of artificial neurons.
- 75.**Thousands of neurons can be linked together to obtain a powerful neural network.
- 76.**An artificial neural network can improve itself over time.
- 77.**One of the applications of smart assistants is SIRI.
- 78.**Artificial neurons can be used on movie suggestion platforms like Netflix.
- 79.**Artificial neurons cannot be used in diagnosing diseases.
- 80.**To build an artificial neuron, we need to determine the data type, give each input a weight, sum the inputs after multiplying them by the weights, and pass the results to the activation function to obtain final results.
- 81.**Data analysis helps in making fact-based decisions.
- 82.**The Python language does not contain libraries to support data analysis.
- 83.**The Pandas library is used for cleaning and processing data.
- 84.**The `np.mean()` function is used to find the smallest value in a list.
- 85.**The arithmetic mean can be calculated manually without NumPy.
- 86.**Textual data can never be analyzed.
- 87.**`pd.to_datetime()` can reject invalid dates like 01-13-2023.
- 88.**The maximum value (Max) is the smallest value in the data.
- 89.**The arithmetic mean produces a decimal number even if the results are integers.
- 90.**Python can be used to analyze date and time data.
- 91.**The value (Max) is the largest value in the data.
- 92.**The value (Min) is the smallest value in the data.
- 93.**Python is characterized by ease of learning and use in data analysis and is compatible with AI and Machine Learning.
- 94.**The mean function calculates the arithmetic mean in Python.

- 95.** To display the result of the arithmetic mean calculation in Python on the screen, we use `print()`.
- 96.** Data analysis is important for extracting insights and making the best decision.
- 97.** The `pd.to_datetime()` function is used to enable time operations and extract parts of the date in Python.
- 98.** The NumPy library is used for scientific calculations.
- 99.** For data visualization, we use the Matplotlib and Seaborn libraries in Python.
- 100.** The `#` symbol is used to place comments on the code, and what follows it is not executed.

Choose the correct answer from the following options:

- 1.**is what is meant by fairness in Artificial Intelligence systems.
- A. Designing systems that work faster.
 - B. Designing systems that work without human intervention.
 - C. Designing systems that are fair and equitable to all individuals.
 - D. Designing systems that monitor all data.
- 2.**is an example of privacy protection.
- A. Sharing your data with any application without review.
 - B. Reading privacy settings before using a new application.
 - C. Posting all your information on the Internet.
 - D. Giving your password to a friend.
- 3.**is the one who makes life-changing decisions in systems based on Artificial Intelligence.
- A. Artificial Intelligence alone.
 - B. Voice assistant.
 - C. Humans.
 - D. Robot.
- 4.** Humans must make important decisions because.....
- A. Artificial Intelligence is slower
 - B. Humans possess awareness, ethics, and empathy.

C. Humans do not make mistakes.

D. Artificial Intelligence cannot analyze data.

5. Bias occurs in Artificial Intelligence.....

A. When data is diverse.

B. When data is incomplete or unfair.

C. When there is a lot of data.

D. When data is modern.

6. The result of training a face recognition system on data of people from only one race is that it.....

A. Works efficiently for everyone

B. Becomes faster.

C. May fail to recognize other races accurately.

D. Improves in translation.

7. The role of a smart user when dealing with Artificial Intelligence is.....

A. Believing everything that appears to them.

B. Neglecting to verify information.

C. Critical thinking and verifying information.

D. Using the technology for gaming only.

8.is considered an example of responsible use of Artificial Intelligence.

A. Using it to harm others.

B. Using it to improve people's lives.

C. Using it to spread rumors.

D. Using it without reviewing the data.

9.is the element that Artificial Intelligence lacks but humans possess.

A. Ability to store data.

B. Ability to learn.

C. Ability to feel and understand values.

D. Ability to analyze numbers.

10. The goal of the "Little AI Innovator" project is:.....

A. Designing games only.

B. Thinking of AI-based solutions for simple problems.

C. Writing difficult codes.

D. Using AI in everything without regulations.

11. Artificial Intelligence is:.....

A. The machine's ability to feel.

B. The machine's ability to "think and make decisions".

C. Human ability to control the computer.

D. A program for displaying images.

12. An example of Artificial Intelligence use in mobile phones is:.....

- A. Writing messages only.
- B. Playing songs.
- C. Face recognition.
- D. Opening the camera manually.

13. Which of the following is a capability of human intelligence and not Artificial Intelligence?

- A. Pattern recognition.
- B. Data processing speed.
- C. Creativity and innovation.
- D. Analyzing millions of data points.

14. Games use Artificial Intelligence to:.....

- A. Display backgrounds.
- B. Move characters in a fixed way.
- C. Make characters adapt to the player's style
- D. Increase the number of players.

15. An example of Artificial Intelligence use on the internet is:.....

- A. Changing the screen color.
- B. Suggesting appropriate content.
- C. Blocking the internet.
- D. Increasing browser speed.

16. Artificial Intelligence is characterized by:.....

- A. Having feelings.
- B. Understanding sarcasm.
- C. Possessing self-awareness.
- D. Processing data at ultra-high speed.

17. Siri is an example of:.....

- A. Image processing.
- B. An AI-based voice assistant.
- C. A drawing program.
- D. An internet browser.

18. Artificial Intelligence cannot do this yet:.....

- A. Analyze images.
- B. Learn from data.
- C. Feel the beauty of an artwork.
- D. Recognize voices.

19.is one of the capabilities of Artificial Intelligence.

- A. Understanding deep social relationships.
- B. Making decisions based on data.
- C. Feeling sadness and joy.
- D. Free artistic creativity.

20. Self-driving cars are an example of.....

- A. Artificial Intelligence in homes.
- B. Artificial Intelligence in education.
- C. Artificial Intelligence in transportation
- D. Artificial Intelligence in medicine.

21.is the best description of Artificial Intelligence.

- A. Making machines faster and stronger.
- B. Making machines think and learn like humans.
- C. Making machines larger in size.
- D. Making machines smaller in size.

22.is the scientist who created a famous test to determine if a machine is intelligent.

- A. Isaac Newton
- B. Albert Einstein
- C. Alan Turing
- D. Al-Khwarizmi.

23. Learning Artificial Intelligence is important for your future because.....

- A. It will disappear soon
- B. It will become an essential part of our jobs and daily lives.
- C. It is a difficult and complex subject only for scientists.
- D. It is an entertainment tool.

24. A computer learning to play chess and defeating the best players is an early example of.....

- A. Machine Learning
- B. The Internet.
- C. 3D Printing.
- D. Using office software.

25. Artificial Intelligence can help solve the traffic congestion problem by.....

- A. Manufacturing more cars.
- B. Analyzing data and organizing traffic movement smartly.
- C. Canceling traffic lights
- D. Disabling car movement.

26. Artificial Intelligence is a powerful tool, which means.....

- A. You must be afraid of it and avoid it.
- B. We must understand its impact and guide it to serve humanity.
- C. No one can control it
- D. Using it irresponsibly.

27.is an advanced type of machine learning that mimics how the human brain works using what are called artificial neural networks.

- A. Deep Learning.
- B. Old learning.
- C. Undeveloped learning.
- D. Canceled learning.

28.is defined as teaching the machine how to learn by itself from data instead of programming it with direct knowledge.

- A. Old learning
- B. Machine Learning
- C. Non-learning
- D. Playing.

29. With the emergence of, scientists gained access to massive amounts of data to develop Machine Learning.

- A. Signals
- B. Images
- C. Games
- D. The Internet

30.One of the most famous expert systems, acting as a program that helps doctors diagnose infectious diseases.

- MYCIN
- SDD
- USB
- CPU

31.is a program that can solve logical mathematical problems.

- SDD
- USB
- Logic Theorist
- PDF

32. An artificial neuron is.....

- A. A program for running games.
- B. A unit that attempts to mimic the human way of thinking.
- C. A part of the computer's memory.
- D. A real biological cell.

33. The function of Inputs in an artificial neuron is.....

- A. Saving results.
- B. Sending decisions.
- C. Receiving information (such as sound and images).
- D. Deleting data.

34. Weights are used in.....

- A. Decorating data.
- B. Determining the importance of each piece of input information.
- C. Storing sound.
- D. Activating the activation function.

35.is the foundation for building what is known as Artificial Neural Networks.

- A. Complex algorithms.
- B. The artificial neuron.
- C. Smart assistants.
- D. Instant translation function.

36. What is the step that follows determining the data type and giving each input a weight in building an artificial neuron?

- A. Obtaining the final result.
- B. Passing the result to the activation function.
- C. Summing the inputs after multiplying them by their weights.
- D. Analyzing the image using weights.

37.is the definition of Data Analysis.

- A. The process of deleting data only.
- B. The process of storing data in files.
- C. The process of converting data into images.
- D. The process of inspecting, cleaning, and transforming data to extract useful information.

38. The Python language is considered suitable for data analysis because

- A. It is difficult to learn.
- B. It does not contain libraries.
- C. It possesses powerful libraries such as Pandas and NumPy.
- D. It only works on phones.

39. The function of the NumPy library is.....

- A. Drawing charts.
- B. Dealing with texts.
- C. Scientific calculations.
- D. Image analysis.

40. Bias resembles.....

- A. Deleting the grade.
- B. Doubling the data.
- C. Adding a simple number to help the cell.
- D. Reducing weights.

41.is one of the functions of Bias.

- A. It reduces the cell's accuracy.
- B. It prevents the cell from working.
- C. It cancels the use of inputs
- D. It makes the cell more flexible.

42. The function of the activation function is.....

- A. Memory management.
- B. Making the final decision.
- C. Calculating weights.
- D. Storing data.

43. The Threshold function acts as.....

- A. A probability.
- B. An On/Off switch that depends on a specific limit.
- C. A color scale.
- D. An audio system.

44. The Sigmoid function provides..... :

- A. A negative number.
- B. A number between 0 and 1 (probability).
- C. A random number.
- D. A number greater than 100.

45.is the part of the cell that helps it make a decision even when inputs are zero.

- A. Inputs
- B. Bias
- C. Weights
- D. Input function.

46. In a neuron, what happens after calculating $(\text{Inputs} \times \text{Weights} + \text{Bias})$?

- A. Data is erased
- B. It is sent directly to the user.
- C. It is passed to the activation function
- D. The cell stops working.

47. The `np.mean()` function is used to calculate.....

- A. The largest number
- B. The smallest number.
- C. The arithmetic(calculate) mean
- D. Summing two lists.

48. In the code `import numpy as np`, what does `as np` mean?

- A. Deleting the library
- B. Changing the Python language.
- C. An abbreviation for the library name to facilitate use.
- D. Running the library automatically.

49. The maximum value (Max) is..... :

- A. The smallest value in the data.
- B. The largest value in the data.
- C. The average of values.
- D. The product of values.

50. What type of data can be analyzed using NLP?

- A. Numerical data
- B. Images
- C. Texts
- D. Dates only.

51.is the benefit of pd.to_datetime:()

- A. Converting text into numbers.
- B. Converting text-based dates into a time format.
- C. Deleting dates.
- D. Sorting data automatically.

52. The data type in the list data [10-20-30-40] is.....

- A. Text data.
- B. Historical (date) data.
- C. Numerical data.
- D. Voice data.

53. The library is used for data visualization in Python.

- A. Pandas
- B. Matplotlib
- C. NumPy
- D. datetime.

54. If an artificial neuron is analyzing an image (for example, a cat), what is the Input that enters the cell?

- A. The decision (Yes/No).
- B. The final output.
- C. The image.
- D. The activation function.

55. Which of the following applications is an example of smart assistants that rely on artificial neurons?

- A. Smart air conditioners.
- B. Siri and Alexa.
- C. Computer operating systems.
- D. Cameras.

56. After the activation function decides on a result (Is this a cat? Yes or No), what is the next step?

- A. Determining the data type again.
- B. Summing the weighted inputs.
- C. Giving each input a weight.
- D. Sending the result to other cells or providing the answer directly.

57. The primary role of the activation function in an artificial neuron's operation is

- A. Determining the weights for each input.
- B. Summing the weighted inputs.
- C. Deciding the final decision (Yes/No).
- D. Entering the image as an input.

58. When we link thousands of artificial neurons together, we obtain a powerful neural network capable of solving complex problems such as.....

A. Writing simple programs.

B. Storing data.

C. Driving cars or diagnosing diseases.

D. Analyzing manual texts only.

59. One of the real-life applications of artificial neurons mentioned regarding content suggestion is.....

A. Smart assistants like Siri.

B. Face recognition cameras.

C. Movie suggestions on platforms like Netflix.

D. Self-driving cars.

60. Artificial neurons are among the technologies used in.....

A. Analyzing fixed product prices.

B. Manually determining product prices.

C. Predicting weather or prices.

D. Displaying a list of all old prices.

61.is the capability a powerful neural network gains over time as a result of learning from experiences.

A. Fixing input weights without changing them.

B. Automatically increasing the number of cells.

C. Improving itself over time.

D. Eliminating the need for an activation function.

62. Dates are considered before using `pd.to_datetime()`

A. Numbers

B. Texts

C. Quantities

D. Large numbers.

63. Customer comments and articles are considered data.

A. Numerical

B. Date and time

C. Textual

D. Large sum.

64. Event schedules and purchase dates are considered data.

A. Numerical

B. Date and time

C. Textual

D. Other.

65. Ages and prices are considered data.

A. Numerical

B. Date and time

C. Textual

D. Other.

Exercises

Put (✓) or (X)

1. The idea of Artificial Intelligence is a very modern concept that emerged in only the last few years. X
2. The concept of Artificial Intelligence faced many challenges in its early stages. ✓
3. The Turing Test is a method used to determine if a machine can successfully simulate human thinking. ✓
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5. Artificial Intelligence is used only in games and entertainment. X
6. Deep Learning is an advanced type of Machine Learning. ✓
7. Artificial Intelligence will be an auxiliary tool in many future jobs. ✓
8. Machine Learning is defined as teaching the machine how to learn by itself from data instead of programming it with direct knowledge. ✓
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10. Following the Dartmouth Conference, scientists began creating the first Artificial Intelligence programs. ✓
11. Computers cannot be fed images and are unable to learn through those models because they cannot detect patterns. X
12. The computer was unable to defeat players in the Chinese game AlphaGo. X
13. Artificial Intelligence cannot distinguish between images. X
14. Deep Learning mimics thinking as a network of interconnected neurons, where each cell receives and sends signals. ✓
15. With the emergence of the Internet, scientists gained access to massive amounts of data to develop Machine Learning. ✓
16. Artificial Intelligence cannot be used in smartphones. X
17. Self-driving cars rely heavily on Artificial Intelligence. ✓
18. Artificial Intelligence provides players with personalized tips to improve their performance in electronic gaming. ✓
19. Artificial Intelligence can feel human emotions exactly like humans. X
20. Artificial Intelligence relies only on data processing without self-awareness. ✓
21. Characters in video games can learn from the user's playing style. ✓
22. Human intelligence possesses creativity, while Artificial Intelligence imitates and does not innovate. ✓

23. Phone cameras that automatically enhance photos utilize Artificial Intelligence techniques. ✓
24. ChatGPT can conduct long conversations and write essays to assist with school homework. ✓
25. It is difficult to use Artificial Intelligence techniques in smart vacuum cleaners. ✗
26. A key feature of Artificial Intelligence is its ability to process huge amounts of data in seconds and execute complex tasks with extreme accuracy. ✓
27. Artificial Intelligence enables smart devices to control lighting with high precision ✓
28. Siri and Alexa use Natural Language Processing (NLP) techniques to understand speech, convert voice to text, analyze requests, and answer questions. ✓
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41. The proposed student project, "The Little AI Innovator," encourages finding solutions to real-world problems using AI. ✓
42. Artificial Intelligence is a power with immense capabilities that can change the world for the better, but we must use it wisely and with ethical responsibility to ensure benefit and security for all. ✓
43. Social intelligence understands complex social and cultural contexts and has the capacity for empathy. ✗
44. If Artificial Intelligence is trained to recognize faces using data primarily containing people of a certain race, it may find it difficult to accurately recognize faces of people from other races. ✓

45. The "Little AI Innovator" project helps students think of AI-based solutions to solve simple problems. ✓
46. Artificial Intelligence should make critical decisions, such as crucial medical decisions, judicial rulings, or national security decisions, to ensure accuracy and neutrality. ✗
47. Artificial Intelligence relies on algorithms for thinking and analysis to solve problems. ✓
48. An artificial neuron attempts to mimic the function of neurons in the human brain. ✓
49. Weights in a neuron do not affect the final decision. ✗
50. Bias helps the neuron provide results even in the absence of inputs. ✓
51. The activation function is responsible for the neuron's final decision. ✓
52. The Threshold function provides values only between 0 and 1. ✗
53. The Sigmoid function is used to provide a probability or a percentage.
54. Inputs can be images, sounds, or numbers. ✓
55. Without the activation function, the neuron will not be able to make a decision. ✓
56. Weights are always fixed values that do not change. ✗
57. Bias does not play any role in adjusting the performance of the neuron. ✗
58. Bias is a number added to the total to adjust the neuron's operation. ✓
59. Weights are used in the neuron to determine the importance of each piece of input information. ✓
60. The ReLU function focuses only on positive values and ignores weak values. ✓
61. The activation function acts as a switch that turns the neuron on or off. ✓
62. Results are the output of the neuron; they represent the final decision of the cell's operation. ✓
63. An artificial neuron cannot learn, think, or make decisions. ✗
64. The output of an artificial neuron can be calculated according to the process: $(\text{Inputs} \times \text{Weights} + \text{Bias})$. ✓
65. The artificial neuron is the foundation upon which the structure of artificial neural networks is built. ✓
66. Artificial neurons are used only for language translation and weather prediction, and are not used in image recognition. ✗
67. The type of input data, such as numbers or images, must be determined as a first and necessary step for building an artificial neuron. ✓
68. The step immediately preceding passing the result to the activation function is giving each input a weight. ✗

69. The final goal of a neuron's operation is to obtain the final output, represented by a decision or prediction. ✓
70. The activation function is what analyzes the image using weights in the cat recognition example. ✗
71. One of the real-life applications of artificial neurons is their use in diagnosing diseases in hospitals. ✓
72. When linking thousands of neurons together, the network loses its ability to learn from experiences and improve itself over time. ✗
73. Self-driving cars are not considered among the complex problems that powerful neural networks can solve. ✗
74. Smart cameras that recognize faces are an example of a real-life application of artificial neurons. ✓
75. Thousands of neurons can be linked together to obtain a powerful neural network. ✓
76. An artificial neural network can improve itself over time. ✓
77. One of the applications of smart assistants is SIRI. ✓
78. Artificial neurons can be used on movie suggestion platforms like Netflix. ✓
79. Artificial neurons cannot be used in diagnosing diseases. ✗
80. To build an artificial neuron, we need to determine the data type, give each input a weight, sum the inputs after multiplying them by the weights, and pass the results to the activation function to obtain final results. ✓
81. Data analysis helps in making fact-based decisions. ✓
82. The Python language does not contain libraries to support data analysis. ✗
83. The Pandas library is used for cleaning and processing data. ✓
84. The `np.mean()` function is used to find the smallest value in a list. ✗
85. The arithmetic mean can be calculated manually without NumPy. ✓
86. Textual data can never be analyzed. ✗
87. `pd.to_datetime()` can reject invalid dates like 01-13-2023. ✓
88. The maximum value (Max) is the smallest value in the data. ✗

89. The arithmetic mean produces a decimal number even if the results are integers. ✓
90. Python can be used to analyze date and time data. ✓
91. The value (Max) is the largest value in the data. ✓
92. The value (Min) is the smallest value in the data. ✓
93. Python is characterized by ease of learning and use in data analysis and is compatible with AI and Machine Learning. ✓
94. The mean function calculates the arithmetic mean in Python. ✓
95. To display the result of the arithmetic mean calculation in Python on the screen, we use print(). ✓
96. Data analysis is important for extracting insights and making the best decision. ✓
97. The pd.to_datetime() function is used to enable time operations and extract parts of the date in Python. ✓
98. The NumPy library is used for scientific calculations. ✓
99. For data visualization, we use the Matplotlib and Seaborn libraries in Python. ✓
100. The # symbol is used to place comments on the code, and what follows it is not executed. ✓

Choose the correct answer from the following options:

1.is what is meant by fairness in Artificial Intelligence systems.

A. Designing systems that work faster.

B. Designing systems that work without human intervention.

C. Designing systems that are fair and equitable to all individuals.

D. Designing systems that monitor all data.

2.is an example of privacy protection.

A. Sharing your data with any application without review.

B. Reading privacy settings before using a new application.

C. Posting all your information on the Internet.

D. Giving your password to a friend.

3.....is the one who makes life-changing decisions in systems based on Artificial Intelligence.

A. Artificial Intelligence alone.

B. Voice assistant.

C. Humans.

D. Robot.

4. Humans must make important decisions because.....

A. Artificial Intelligence is slower

B. Humans possess awareness, ethics, and empathy.

C. Humans do not make mistakes.

D. Artificial Intelligence cannot analyze data.

5. Bias occurs in Artificial Intelligence.....

A. When data is diverse.

B. When data is incomplete or unfair.

C. When there is a lot of data.

D. When data is modern.

6. The result of training a face recognition system on data of people from only one race is that it.....

A. Works efficiently for everyone

B. Becomes faster.

C. May fail to recognize other races accurately.

D. Improves in translation.

7. The role of a smart user when dealing with Artificial Intelligence is.....

A. Believing everything that appears to them.

B. Neglecting to verify information.

C. Critical thinking and verifying information.

D. Using the technology for gaming only.

8.is considered an example of responsible use of Artificial Intelligence.

A. Using it to harm others.

B. Using it to improve people's lives.

C. Using it to spread rumors.

D. Using it without reviewing the data.

9.is the element that Artificial Intelligence lacks but humans possess.

A. Ability to store data.

B. Ability to learn.

C. Ability to feel and understand values.

D. Ability to analyze numbers.

10. The goal of the "Little AI Innovator" project is:.....

A. Designing games only.

B. Thinking of AI-based solutions for simple problems.

C. Writing difficult codes.

D. Using AI in everything without regulations.

11. Artificial Intelligence is:.....

A. The machine's ability to feel.

B. The machine's ability to "think and make decisions".

C. Human ability to control the computer.

D. A program for displaying images.

12. An example of Artificial Intelligence use in mobile phones is:.....

A. Writing messages only.

B. Playing songs.

C. Face recognition.

D. Opening the camera manually.

13. Which of the following is a capability of human intelligence and not Artificial Intelligence?

A. Pattern recognition.

B. Data processing speed.

C. Creativity and innovation.

D. Analyzing millions of data points.

14. Games use Artificial Intelligence to:.....

A. Display backgrounds.

B. Move characters in a fixed way.

C. Make characters adapt to the player's style

D. Increase the number of players.

15. An example of Artificial Intelligence use on the internet is:.....

A. Changing the screen color.

B. Suggesting appropriate content.

C. Blocking the internet.

D. Increasing browser speed.

16. Artificial Intelligence is characterized by:.....

A. Having feelings.

B. Understanding sarcasm.

C. Possessing self-awareness.

D. Processing data at ultra-high speed.

17. Siri is an example of:.....

A. Image processing.

B. An AI-based voice assistant.

C. A drawing program.

D. An internet browser.

18. Artificial Intelligence cannot do this yet:.....

A. Analyze images.

B. Learn from data.

C. Feel the beauty of an artwork.

D. Recognize voices.

19.is one of the capabilities of Artificial Intelligence.

A. Understanding deep social relationships.

B. Making decisions based on data.

C. Feeling sadness and joy.

D. Free artistic creativity.

20. Self-driving cars are an example of.....

A. Artificial Intelligence in homes.

B. Artificial Intelligence in education.

C. Artificial Intelligence in transportation

D. Artificial Intelligence in medicine.

21.is the best description of Artificial Intelligence.

A. Making machines faster and stronger.

B. Making machines think and learn like humans.

C. Making machines larger in size.

D. Making machines smaller in size.

22.is the scientist who created a famous test to determine if a machine is intelligent.

A. Isaac Newton

B. Albert Einstein

C. Alan Turing

D. Al-Khwarizmi.

23. Learning Artificial Intelligence is important for your future because.....

A. It will disappear soon

D. It is an entertainment tool.

B. It will become an essential part of our jobs and daily lives.

C. It is a difficult and complex subject only for scientists.

24. A computer learning to play chess and defeating the best players is an early example of.....

A. Machine Learning

B. The Internet.

C. 3D Printing.

D. Using office software.

25. Artificial Intelligence can help solve the traffic congestion problem by.....

A. Manufacturing more cars.

B. Analyzing data and organizing traffic movement smartly.

C. Canceling traffic lights

D. Disabling car movement.

26. Artificial Intelligence is a powerful tool, which means.....

A. You must be afraid of it and avoid it.

B. We must understand its impact and guide it to serve humanity.

C. No one can control it

D. Using it irresponsibly.

27.is an advanced type of machine learning that mimics how the human brain works using what are called artificial neural networks.

A. Deep Learning.

B. Old learning.

C. Undeveloped learning.

D. Canceled learning.

28.is defined as teaching the machine how to learn by itself from data instead of programming it with direct knowledge.

A. Old learning

B. Machine Learning

C. Non-learning

D. Playing.

29. With the emergence of, scientists gained access to massive amounts of data to develop Machine Learning.

A. Signals

B. Images

C. Games

D. The Internet

30.One of the most famous expert systems, acting as a program that helps doctors diagnose infectious diseases.

MYCIN

SDD

USB

CPU

31.is a program that can solve logical mathematical problems.

SDD

USB

Logic Theorist

PDF

32. An artificial neuron is.....

A. A program for running games.

B. A unit that attempts to mimic the human way of thinking.

C. A part of the computer's memory.

D. A real biological cell.

33. The function of Inputs in an artificial neuron is.....

A. Saving results.

B. Sending decisions.

C. Receiving information (such as sound and images).

D. Deleting data.

34. Weights are used in.....

A. Decorating data.

B. Determining the importance of each piece of input information.

C. Storing sound.

D. Activating the activation function.

35.is the foundation for building what is known as Artificial Neural Networks.

A. Complex algorithms.

B. The artificial neuron.

C. Smart assistants.

D. Instant translation function.

36. What is the step that follows determining the data type and giving each input a weight in building an artificial neuron?

A. Obtaining the final result.

D. Analyzing the image using weights.

B. Passing the result to the activation function.

C. Summing the inputs after multiplying them by their weights.

37.is the definition of Data Analysis.

A. The process of deleting data only.

B. The process of storing data in files.

C. The process of converting data into images.

D. The process of inspecting, cleaning, and transforming data to extract useful information.

38. The Python language is considered suitable for data analysis because

A. It is difficult to learn.

B. It does not contain libraries.

C. It possesses powerful libraries such as Pandas and NumPy.

D. It only works on phones.

39. The function of the NumPy library is.....

A. Drawing charts.

B. Dealing with texts.

C. Scientific calculations.

D. Image analysis.

40. Bias resembles.....

A. Deleting the grade.

B. Doubling the data.

C. Adding a simple number to help the cell.

D. Reducing weights.

41.is one of the functions of Bias.

A. It reduces the cell's accuracy.

B. It prevents the cell from working.

C. It cancels the use of inputs

D. It makes the cell more flexible.

42. The function of the activation function is.....

A. Memory management.

B. Making the final decision.

C. Calculating weights.

D. Storing data.

43. The Threshold function acts as.....

A. A probability.

B. An On/Off switch that depends on a specific limit.

C. A color scale.

D. An audio system.

44. The Sigmoid function provides..... :

A. A negative number.

B. A number between 0 and 1 (probability).

C. A random number.

D. A number greater than 100.

45.is the part of the cell that helps it make a decision even when inputs are zero.

A. Inputs

B. Bias

C. Weights

D. Input function.

46. In a neuron, what happens after calculating $(\text{Inputs} \times \text{Weights} + \text{Bias})$?

A. Data is erased

B. It is sent directly to the user.

C. It is passed to the activation function

D. The cell stops working.

47. The `np.mean()` function is used to calculate.....

A. The largest number

B. The smallest number.

C. The arithmetic(calculate) mean

D. Summing two lists.

48. In the code `import numpy as np`, what does `as np` mean?

A. Deleting the library

B. Changing the Python language.

C. An abbreviation for the library name to facilitate use.

D. Running the library automatically.

49. The maximum value (Max) is..... :

A. The smallest value in the data.

B. The largest value in the data.

C. The average of values.

D. The product of values.

50. What type of data can be analyzed using NLP?

A. Numerical data

B. Images

C. Texts

D. Dates only.

51.is the benefit of pd.to_datetime:()

A. Converting text into numbers.

B. Converting text-based dates into a time format.

C. Deleting dates.

D. Sorting data automatically.

52. The data type in the list data [10-20-30-40] is.....

A. Text data.

B. Historical (date) data.

C. Numerical data.

D. Voice data.

53. The library is used for data visualization in Python.

A. Pandas

B. Matplotlib

C. NumPy

D. datetime.

54. If an artificial neuron is analyzing an image (for example, a cat), what is the Input that enters the cell?

A. The decision (Yes/No).

B. The final output.

C. The image.

D. The activation function.

55. Which of the following applications is an example of smart assistants that rely on artificial neurons?

A. Smart air conditioners.

B. Siri and Alexa.

C. Computer operating systems.

D. Cameras.

56. After the activation function decides on a result (Is this a cat? Yes or No), what is the next step?

A. Determining the data type again.

B. Summing the weighted inputs.

C. Giving each input a weight.

D. Sending the result to other cells or providing the answer directly.

57. The primary role of the activation function in an artificial neuron's operation is

A. Determining the weights for each input.

B. Summing the weighted inputs.

C. Deciding the final decision (Yes/No).

D. Entering the image as an input.

58. When we link thousands of artificial neurons together, we obtain a powerful neural network capable of solving complex problems such as.....

A. Writing simple programs.

B. Storing data.

C. Driving cars or diagnosing diseases.

D. Analyzing manual texts only.

59. One of the real-life applications of artificial neurons mentioned regarding content suggestion is.....

A. Smart assistants like Siri.

B. Face recognition cameras.

C. Movie suggestions on platforms like Netflix.

D. Self-driving cars.

60. Artificial neurons are among the technologies used in.....

A. Analyzing fixed product prices.

B. Manually determining product prices.

C. Predicting weather or prices.

D. Displaying a list of all old prices.

61.is the capability a powerful neural network gains over time as a result of learning from experiences.

A. Fixing input weights without changing them.

B. Automatically increasing the number of cells.

C. Improving itself over time.

D. Eliminating the need for an activation function.

62. Dates are considered before using `pd.to_datetime()`

A. Numbers

B. Texts

C. Quantities

D. Large numbers.

63. Customer comments and articles are considered data.

A. Numerical

B. Date and time

C. Textual

D. Large sum.

64. Event schedules and purchase dates are considered data.

A. Numerical

B. Date and time

C. Textual

D. Other.

65. Ages and prices are considered data.

A. Numerical

B. Date and time

C. Textual

D. Other.

حمل الآن

مجانا وحصريا

المراجعة رقم (4)

اختبار شهر مارس



Q1: Choose the correct answer

1. What is the best description of AI?
 - a. Making machines faster and stronger.
 - b. Making machines think and learn like humans.
 - c. Making machines larger in size.
 - d. Making machines smaller in size.
2. Who is the scientist who created a famous test to see if a machine is intelligent?
 - a. Isaac Newton
 - b. Albert Einstein
 - c. Alan Turing
 - d. Al-Khwarizmi
3. is an early program that could solve logical mathematical problems.
 - a. Logic Theorist
 - b. AlphaGo
 - c. MYCIN
 - d. General Problem Solver
4. What was "MYCIN"?
 - a. Robot Chef
 - b. Robot Doctor
 - c. Robot Pilot
 - d. Robot Teacher
5. Why is learning AI important for your future?
 - a. Because it will disappear soon.
 - b. Because it will become an essential part of our jobs and daily lives.
 - c. Because it is a difficult and complex topic only for scientists.
 - d. Because it is a fun tool.
6. In the 1970s, scientists created to teach machines special knowledge from experts.
 - a. self-driving cars
 - b. neural networks
 - c. expert systems
 - d. none of them
7. Teaching a computer to play chess and win against the best players is an early example of
 - a. machine learning
 - b. the Internet
 - c. 3D printing
 - d. using Office software
8. In the 1990s, the appearance of provided huge amounts of data for scientists.
 - a. self-operating machines
 - b. MYCIN
 - c. the Internet
 - d. logic programs
9. How can AI help solve the traffic congestion problem?
 - a. Manufacturing more cars.
 - b. By analyzing data and organizing traffic flow smartly.
 - c. By removing traffic lights.
 - d. By disabling car movement.



10. Teaching a computer to learn from data by itself instead of programming it with knowledge is called
- a. machine learning
 - b. automation
 - c. philosophy
 - d. the Turing Test
11. The phrase "AI is a powerful tool" means that:
- a. We should fear and avoid it.
 - b. No one can control it.
 - c. To use it irresponsibly.
 - d. We must understand its impact and direct it to help people.
12. is an advanced type of Machine Learning that mimics the human brain.
- a. Simple logic
 - b. Early mechanics
 - c. Deep Learning
 - d. Expert systems
13. Deep Learning uses what is called
- a. Artificial Neural Networks
 - b. automation systems
 - c. Turing Test
 - d. text messages
14. One reason for the AI crisis was that scientists made promises.
- a. very small
 - b. realistic
 - c. no
 - d. overstated
15. Artificial Intelligence is:
- a. The ability of the machine to feel.
 - b. The ability of the machine to "think" and make a decision.
 - c. The ability of human to control the computer.
 - d. A program for displaying images.
16. Smart characters in games that interact and adapt with you are an example of
- a. human intelligence
 - b. manual programming
 - c. Artificial Intelligence
 - d. mechanical parts
17. From the examples of using AI in mobile phones:
- a. Writing messages only.
 - b. Playing songs.
 - c. Facial recognition.
 - d. Opening the camera manually.
18. use natural language processing (NLP) to understand your speech.
- a. Smart vacuums
 - b. Self-driving cars
 - c. Smart lighting
 - d. Voice assistants



19. Which of the following is an ability of human intelligence?
- Creativity and innovation.
 - Pattern recognition.
 - Speed of data processing.
 - Analyzing big data.
20. A smartphone camera uses AI to
- print photos.
 - automatically improve photos
 - charge the battery.
 - record physical touch.
21. Games use Artificial Intelligence in:
- Displaying backgrounds.
 - Moving the character in a fixed way.
 - Making characters adapt to the player's style.
 - Increasing the number of players.
22. can conduct natural conversations and help you with school homework.
- Smart vacuums
 - ChatGPT
 - Self-driving cars
 - Spotify
23. From the examples of using AI on the Internet:
- Changing the screen color.
 - Suggesting appropriate content.
 - Blocking the Internet.
 - Increasing browser speed.
24. Artificial Intelligence is defined as the ability of computer systems to human abilities.
- simulate
 - replace
 - ignore
 - destroy
25. Artificial Intelligence is characterized by
- Having feelings.
 - Understanding sarcasm.
 - having self-awareness.
 - Processing data at super speed.
26. In entertainment, AI platforms like discover songs you will like.
- Facebook
 - ChatGPT
 - Spotify
 - Siri
27. Siri is an example of:
- Image processing.
 - A voice assistant based on AI.
 - A drawing program.
 - An Internet browser.



28. What is artificial intelligence unable to do yet?
- Analyzing images.
 - Learning from data.
 - Feeling the beauty of a painting.
 - Recognizing voices.
29. From the abilities of Artificial Intelligence:
- Understanding deep social relationships.
 - Making decisions based on data.
 - Feeling sadness and joy.
 - Free artistic creativity.
30. Self-driving cars are an example of:
- Artificial Intelligence in homes.
 - Artificial Intelligence in education.
 - Artificial Intelligence in transportation.
 - Artificial Intelligence in medicine.
31. What is meant by fairness in AI systems?
- Designing systems that work faster.
 - Designing systems that work without human intervention.
 - Designing fair systems for all.
 - Designing systems that monitor all data.
32. The ethical rule that states your data cannot be used without your permission is
- fairness
 - privacy
 - responsibility
 - transparency
33. Examples of privacy protection include
- reading privacy settings before using a new app.
 - sharing your data with any application without review.
 - sharing all your information on the Internet.
 - giving your password to a friend.
34. Who makes important decisions in systems based on AI?
- Only AI
 - Voice assistants.
 - Humans.
 - Robots.
35. means you do not trust everything AI produces automatically.
- Fast thinking
 - Critical thinking
 - No thinking
 - Biased thinking
36. Why should humans make the critical decisions?
- Because AI is slower.
 - Because AI cannot analyze data.
 - Because humans do not make mistakes.
 - Because humans have awareness, ethics, and empathy.



37. AI systems become "biased" when they are trained using
- a. too much data
 - b. very fast computers
 - c. incomplete or unfair data
 - d. diverse and fair data
38. When does bias occur in Artificial Intelligence?
- a. When the data is diverse.
 - b. When there is a lot of data.
 - c. When the data is limited or unfair.
 - d. When the data is updated.
39. If a facial recognition system only recognizes one race, this is an example of
- a. fairness
 - b. bias
 - c. responsibility
 - d. privacy
40. If a facial recognition system is trained using data from only one race, it will
- a. work efficiently for everyone.
 - b. become faster.
 - c. improve in translation.
 - d. fail to recognize other races.
41. Humans set the that AI systems must follow.
- a. colors
 - b. values and principles
 - c. weather
 - d. prices
42. The role of a smart user when dealing with AI is to
- a. believe everything they see
 - b. ignore verifying information
 - c. think critically and verify information
 - d. use AI only for playing
43. Treating all people equally without discrimination based on race or gender is called
- a. privacy
 - b. complexity
 - c. speed
 - d. fairness
44. Which of the following is an example of responsible use of AI?
- a. Using it to harm others.
 - b. Using it to improve people's lives.
 - c. Using it to spread rumors.
 - d. Using it without reviewing the data.
45. What is an element AI does not have that humans have?
- a. The ability to feel and understand values.
 - b. The ability to store data.
 - c. The ability to learn.
 - d. The ability to analyze numbers.



46. Responsible AI users should
- a. think critically
 - b. verify information
 - c. use AI ethically
 - d. all of them
47. The goal of the "Young AI Innovator" project is:
- a. Designing games only.
 - b. Creating AI solutions for real problems.
 - c. Writing complex codes.
 - d. Using AI in everything without rules.
48. What is an Artificial Neuron?
- a. A program for running games.
 - b. A unit that tries to imitate the way humans think.
 - c. A part of the computer's memory.
 - d. A real biological cell.
49. What is the function of inputs in an artificial neuron?
- a. Saving results.
 - b. Sending decisions.
 - c. Receiving information.
 - d. Deleting data.
50. Weights are used to
- a. determine the importance of each piece of information.
 - b. decorate data.
 - c. store sounds.
 - d. run the activation function.
51. The activation function works like a that turns the neuron on or off.
- a. router
 - b. switch
 - c. cable
 - d. battery
52. Bias is similar to
- a. deleting a mark.
 - b. increasing a small number to help the cell.
 - c. doubling data.
 - d. reducing weights.
53. Calculation in a neuron is performed by the formula: $(\text{Inputs} \times \text{Weights}) + \dots$
- a. Output
 - b. Ratio
 - c. Activation
 - d. Bias
54. One of the functions of Bias is that
- a. it reduces the accuracy of the cell.
 - b. it prevents the cell from working.
 - c. it makes the cell more flexible.
 - d. it cancels the use of inputs.



55. What is the function of the Activation Function?
- Managing memory.
 - Calculating weights.
 - Storing data.
 - Making the final decision.
56. The function gives the same value if it's positive but changes negative values to zero.
- ReLU
 - Sigmoid
 - Threshold
 - AI
57. The Threshold function works as a/an
- probability.
 - On/Off switch based on a certain limit.
 - color scale.
 - audio system.
58. A student needing 5 extra marks as help to pass is an example of
- Weights
 - Bias
 - Outputs
 - ReLU
59. The Sigmoid function gives
- a negative number.
 - a number between 0 and 1 (probability).
 - a random number.
 - a number greater than 100.
60. The Threshold function gives a "Pass" result if the value is a specific number.
- less than
 - equal to
 - greater than
 - both a and b
61. Which part of the cell helps it make a decision even when inputs are zero?
- Inputs.
 - Weights.
 - Bias.
 - Input function.
62. To determine if a student is "Excellent" or "Weak", we use the
- activation function
 - bias only
 - physical wires
 - modem
63. If the computer says there is an 85% probability that an image is a cat, it is using
- ReLU
 - Sigmoid
 - Threshold
 - Wired network



64. In a neuron: What happens after calculating (Inputs $\times$ Weights + Bias)?
- Data is erased.
 - It's sent directly to the user.
 - The cell stops working.
 - It's passed to the activation function.
65. The final result given by the artificial neuron is called
- Input
 - Weight
 - Output
 - Bias
66. What is the basic building unit of Artificial Neural Networks?
- Complex algorithms.
 - The artificial neuron.
 - Smart assistants.
 - Instant translation function.
67. Artificial neural networks are used in
- image recognition
 - language translation
 - predicting weather
 - all of them
68. To build an artificial neuron, the first step is to
- identify the type of inputs
 - identify weights
 - use activation function
 - get the final output
69. What is the step that comes after identifying the data type and giving each input a weight when building an artificial neuron?
- Obtaining the final output.
 - Passing the result to the activation function.
 - Adding the inputs after multiplying them by their weights.
 - Analyzing the image using weights.
70. Smart cameras use artificial neurons to
- recognize faces
 - connect to Wi-Fi
 - convert signals
 - print photos
71. When thousands of artificial neurons are connected, they form a/an
- database
 - operating system
 - neural network
 - software tool
72. What is the main role of the activation function in an artificial neuron?
- Decide the final decision (Yes/No).
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73. The neuron analyzes the input image using
- storage
 - sensors
 - weights
 - routers
74. When we connect thousands of artificial neurons together, we get a neural network that can solve complex problems such as:
- Writing simple programs.
 - Driving cars or diagnosing diseases.
 - Storing data.
 - Analyzing manual texts only.
75. One real-life application of artificial neurons related to content suggestion is
- smart assistants like Siri.
 - face recognition cameras
 - suggesting movies on platforms like Watch It.
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- Analyzing fixed product prices.
 - Identifying product prices manually.
 - Displaying a list of all old prices.
 - Predicting the weather or prices.
77. What ability does a powerful neural network gain as a result of learning from experiences?
- Fixing input weights.
 - Increasing the number of cells in it automatically.
 - Improving itself over time.
 - No need for an activation function.
78. If the neuron is analyzing an image (e.g., a cat), what is the input that enters the cell?
- The decision (Yes/No).
 - The image.
 - The final output.
 - The activation function.
79. Which of the following applications is an example of smart assistants that rely on artificial neurons?
- Smart AC devices.
 - Siri and Alexa.
 - Computer operating systems.
 - Photocopying machines.
80. After the activation function decides the result, what is the next step?
- Identifying the data type again.
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 - Giving each input a weight.
 - Sending the result to other cells or giving you the answer directly.
81. The final output of an artificial neuron represents the
- network speed
 - storage capacity
 - decision or prediction
 - input data



82. Why is Python considered suitable for data analysis?
- a. Because it has powerful libraries like Pandas and NumPy.
 - b. Because it is difficult to learn.
 - c. Because it does not contain libraries.
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83. library is used for data processing and manipulation in Python.
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85. What is the function of the NumPy library?
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86. All of the following are Python libraries for data analysis EXCEPT
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90. In the code "import numpy as np", what does "as np" mean?
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91. The function divides the sum of values by their count.

- a. max()
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- c. print()
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92. The function is used to display results on the screen.

- a. max()
- b. min()
- c. print()
- d. mean()

93. The Maximum value (Max) is

- a. the largest value in the data.
- b. the smallest value in the data.
- c. the average of values.
- d. the result of multiplying values.

94. Which type of data can be analyzed using NLP?

- a. Numerical data.
- b. Images.
- c. Text.
- d. Dates only.

95. What is the benefit of `pd.to_datetime()`?

- a. Converting text into numbers.
- b. Converting text dates into a time format.
- c. Deleting dates.
- d. Sorting data automatically.

96. What is the data type in the list `data = [10, 20, 30, 40, 50]`?

- a. Text data.
- b. Date data.
- c. Numerical data.
- d. Audio data.



97. Which library is used for data visualization in Python?

- a. Pandas.
- b. NumPy.
- c. Datetime.
- d. Matplotlib.

98. One advantage of Python in data analysis is

- a. its limited support resources
- b. that it works only offline
- c. its large support community
- d. that it works only with numbers

Q2: Put (✓) or (X)

- 1. The idea of AI is a very modern idea that appeared in the last few years. ()
- 2. The idea of AI faced many challenges in its early days. ()
- 3. The Turing Test is a way to know if a machine can successfully simulate human thinking. ()
- 4. Machine Learning is a branch of AI that allows computers to learn from experience. ()
- 5. AI is only used in games and entertainment. ()
- 6. Deep Learning is an advanced type of Machine Learning. ()
- 7. AI will be a helpful tool in many future jobs. ()
- 8. Alan Turing is often called the "Father of Artificial Intelligence." ()
- 9. The term "Artificial Intelligence" was first used in 1990. ()
- 10. Early AI programs like "General Problem Solver" were as fast as modern laptops. ()
- 11. Expert systems try to copy the knowledge of specialized human experts. ()
- 12. Machine Learning allows computers to learn from data instead of being programmed for every step. ()
- 13. Deep Learning uses "Artificial Neural Networks" to process information. ()
- 14. Learning about AI is only important for people who want to be scientists. ()
- 15. AI can help solve traffic congestion by analyzing data and organizing flow. ()
- 16. Artificial Intelligence can feel human emotions. ()
- 17. AI makes machines act as if they are thinking. ()
- 18. Artificial Intelligence relies on processing data only without self-awareness. ()
- 19. AI feel complex emotions like joy, sadness, love, and empathy. ()
- 20. Video games use AI to make competitors act more intelligently. ()
- 21. Characters in video games can learn from the user's play style. ()
- 22. Voice assistants like Siri and Alexa use Natural Language Processing (NLP). ()
- 23. Human intelligence have creativity while Artificial Intelligence imitates and does not innovate. ()



24. AI processes information much slower than the human brain. ()
25. The phone camera that improves photos automatically uses Artificial Intelligence. ()
26. AI can understand the deep "feeling" of a piece of music. ()
27. Smart vacuum cleaners are an example of AI used at home. ()
28. Smart search engines like Google do not rely on Artificial Intelligence. ()
29. Non-Player Characters (NPCs) in games can learn from your playing style. ()
30. Artificial Intelligence can understand sarcasm and emotions with the same accuracy as humans. ()
31. AI makes decisions based on data and rules, not feelings. ()
32. Robots can be programmed to make decisions based on data. ()
33. Smart devices in homes such as smart vacuum cleaners rely on AI. ()
34. AI is a powerful technology that can improve our lives. ()
35. AI should be designed to be fair for everyone. ()
36. Humans have empathy and ethics that AI does not. ()
37. No one has the right to use your personal data without your permission. ()
38. AI can make critical decisions better than humans. ()
39. Humans are the final decision-makers because they have ethics and awareness. ()
40. Critical thinking means accepting AI results without any questions. ()
41. Bias in AI may happen due to incomplete or unfair data. ()
42. National security decisions must always be made by humans. ()
43. It is safe to trust all AI results without verifying them. ()
44. Using diverse data helps make AI fairer. ()
45. Human supervision is not necessary because AI is very powerful. ()
46. Using AI to improve people's lives is a responsible use of AI. ()
47. Privacy means that no one should use your data without your permission. ()
48. Facial recognition is not affected by the quality of data used in training AI. ()
49. AI can understand complex cultural situations better than humans. ()
50. One role of the smart AI user is critical thinking and verifying information. ()
51. Scientists created artificial neurons to help machines make decisions. ()
52. The artificial neuron tries to imitate the work of neurons in the human brain. ()
53. Weights in a neuron do not affect the final decision. ()
54. Bias helps the cell give results even in the absence of inputs. ()
55. The Sigmoid function only gives a "Yes" or "No" answer. ()
56. The activation function is responsible for executing the cell's final decision. ()
57. The Threshold function gives values between 0 and 1 only. ()
58. In artificial neuron, the formula for calculation is $(\text{Inputs} + \text{Weights}) \times \text{Bias}$. ()
59. The Sigmoid function is used to give a probability or ratio. ()
60. Bias makes the artificial neuron more flexible in its decisions. ()



61. Inputs can be images, sounds, or numbers. ()
62. If a value is less than the specific number in a Threshold function, the result is 1. ()
63. Without an activation function, the neuron will not be able to make a decision. ()
64. An artificial neuron can give a result even when inputs are zero. ()
65. Weights are always fixed values that do not change. ()
66. ReLU function focuses only on positive values. ()
67. Bias has no role in adjusting the cell's performance. ()
68. The artificial neuron is the basic building unit of Artificial Neural Networks. ()
69. Artificial neurons are used only in language translation and weather prediction, and are not used in image recognition. ()
70. A neural network cannot learn from previous experiences. ()
71. Identifying the type of input data (such as numbers or images) is the first step in building an artificial neuron. ()
72. To get the result, we add inputs before multiplying them by weights. ()
73. Giving a weight to each input is the step that directly comes before sending the result to the activation function. ()
74. The final goal of an artificial neuron is to obtain the final output which represents a decision or prediction. ()
75. The activation function analyzes the image using weights in the recognition example. ()
76. Platforms like YouTube use neural networks for features such as suggesting videos. ()
77. One real-life application of artificial neurons is diagnosing diseases in hospitals. ()
78. When thousands of neurons are connected together, the network loses its ability to learn from experiences and improve over time. ()
79. The activation function is responsible for getting the final output. ()
80. Self-driving cars are not considered complex problems that powerful neural networks can solve. ()
81. Smart cameras that recognize faces are an example of a real-life application of the artificial neuron. ()
82. A neuron always gives the final answer and never sends data to other neurons. ()
83. Improving performance over time is a characteristic of a neural network. ()
84. The result of multiplying inputs by weights is sent directly as the final output. ()
99. Python is difficult for beginners to learn and use. ()
100. Data analysis helps in making fact-based decisions. ()
101. Python does not contain libraries to support data analysis. ()
102. The Pandas library is used to clean and process data. ()
103. Seaborn is a library used for scientific calculations. ()
104. The np.mean() function is used to find the smallest value in a list. ()
105. Numerical data includes integers and decimals. ()
106. The mean can be calculated manually without NumPy. ()



107. To calculate the mean, the list of numbers must be ordered. ()
108. The result of calculating the mean is usually a decimal number. ()
109. Text data can never be analyzed. ()
110. Min() is the function used to find the smallest value in a dataset. ()
111. pd.to_datetime() can reject invalid dates like "2023-13-01". ()
112. Weights and prices are examples of integer numerical data. ()
113. The Maximum value (Max) is the smallest value in the data. ()
114. Text data includes articles and customer comments. ()
115. The arithmetic mean produces a decimal number even if the results are whole numbers. ()
116. NumPy is used to calculate the time difference between two dates. ()
117. Python can be used to analyze date and time data. ()
118. The print() function is used to display results on the screen. ()



Choose the correct answer

1. What is the best description of AI?
 - a. Making machines faster and stronger.
 - b. Making machines think and learn like humans.**
 - c. Making machines larger in size.
 - d. Making machines smaller in size.
2. Who is the scientist who created a famous test to see if a machine is intelligent?
 - a. Isaac Newton
 - b. Albert Einstein
 - c. Alan Turing**
 - d. Al-Khwarizmi
3. is an early program that could solve logical mathematical problems.
 - a. Logic Theorist**
 - b. AlphaGo
 - c. MYCIN
 - d. General Problem Solver
4. What was "MYCIN"?
 - a. Robot Chef
 - b. Robot Doctor**
 - c. Robot Pilot
 - d. Robot Teacher
5. Why is learning AI important for your future?
 - a. Because it will disappear soon.
 - b. Because it will become an essential part of our jobs and daily lives.**
 - c. Because it is a difficult and complex topic only for scientists.
 - d. Because it is a fun tool.
6. In the 1970s, scientists created to teach machines special knowledge from experts.
 - a. self-driving cars
 - b. neural networks
 - c. expert systems**
 - d. none of them
7. Teaching a computer to play chess and win against the best players is an early example of
 - a. machine learning**
 - b. the Internet
 - c. 3D printing
 - d. using Office software
8. In the 1990s, the appearance of provided huge amounts of data for scientists.
 - a. self-operating machines
 - b. MYCIN
 - c. the Internet**
 - d. logic programs
9. How can AI help solve the traffic congestion problem?
 - a. Manufacturing more cars.
 - b. By analyzing data and organizing traffic flow smartly.**
 - c. By removing traffic lights.
 - d. By disabling car movement.



10. Teaching a computer to learn from data by itself instead of programming it with knowledge is called
- a. machine learning
 - b. automation
 - c. philosophy
 - d. the Turing Test
11. The phrase "AI is a powerful tool" means that:
- a. We should fear and avoid it.
 - b. No one can control it.
 - c. To use it irresponsibly.
 - d. We must understand its impact and direct it to help people.
12. is an advanced type of Machine Learning that mimics the human brain.
- a. Simple logic
 - b. Early mechanics
 - c. Deep Learning
 - d. Expert systems
13. Deep Learning uses what is called
- a. Artificial Neural Networks
 - b. automation systems
 - c. Turing Test
 - d. text messages
14. One reason for the AI crisis was that scientists made promises.
- a. very small
 - b. realistic
 - c. no
 - d. overstated
15. Artificial Intelligence is:
- a. The ability of the machine to feel.
 - b. The ability of the machine to "think" and make a decision.
 - c. The ability of human to control the computer.
 - d. A program for displaying images.
16. Smart characters in games that interact and adapt with you are an example of
- a. human intelligence
 - b. manual programming
 - c. Artificial Intelligence
 - d. mechanical parts
17. From the examples of using AI in mobile phones:
- a. Writing messages only.
 - b. Playing songs.
 - c. Facial recognition.
 - d. Opening the camera manually.
18. use natural language processing (NLP) to understand your speech.
- a. Smart vacuums
 - b. Self-driving cars
 - c. Smart lighting
 - d. Voice assistants



19. Which of the following is an ability of human intelligence?
- a. Creativity and innovation.
 - b. Pattern recognition.
 - c. Speed of data processing.
 - d. Analyzing big data.
20. A smartphone camera uses AI to
- a. print photos.
 - b. automatically improve photos
 - c. charge the battery.
 - d. record physical touch.
21. Games use Artificial Intelligence in:
- a. Displaying backgrounds.
 - b. Moving the character in a fixed way.
 - c. Making characters adapt to the player's style.
 - d. Increasing the number of players.
22. can conduct natural conversations and help you with school homework.
- a. Smart vacuums
 - b. ChatGPT
 - c. Self-driving cars
 - d. Spotify
23. From the examples of using AI on the Internet:
- a. Changing the screen color.
 - b. Suggesting appropriate content.
 - c. Blocking the Internet.
 - d. Increasing browser speed.
24. Artificial Intelligence is defined as the ability of computer systems to human abilities.
- a. simulate
 - b. replace
 - c. ignore
 - d. destroy
25. Artificial Intelligence is characterized by
- a. Having feelings.
 - b. Understanding sarcasm.
 - c. having self-awareness.
 - d. Processing data at super speed.
26. In entertainment, AI platforms like discover songs you will like.
- a. Facebook
 - b. ChatGPT
 - c. Spotify
 - d. Siri
27. Siri is an example of:
- a. Image processing.
 - b. A voice assistant based on AI.
 - c. A drawing program.
 - d. An Internet browser.



28. What is artificial intelligence unable to do yet?
- Analyzing images.
 - Learning from data.
 - Feeling the beauty of a painting.
 - Recognizing voices.
29. From the abilities of Artificial Intelligence:
- Understanding deep social relationships.
 - Making decisions based on data.
 - Feeling sadness and joy.
 - Free artistic creativity.
30. Self-driving cars are an example of:
- Artificial Intelligence in homes.
 - Artificial Intelligence in education.
 - Artificial Intelligence in transportation.
 - Artificial Intelligence in medicine.
31. What is meant by fairness in AI systems?
- Designing systems that work faster.
 - Designing systems that work without human intervention.
 - Designing fair systems for all.
 - Designing systems that monitor all data.
32. The ethical rule that states your data cannot be used without your permission is
- fairness
 - privacy
 - responsibility
 - transparency
33. Examples of privacy protection include
- reading privacy settings before using a new app.
 - sharing your data with any application without review.
 - sharing all your information on the Internet.
 - giving your password to a friend.
34. Who makes important decisions in systems based on AI?
- Only AI
 - Voice assistants.
 - Humans.
 - Robots.
35. means you do not trust everything AI produces automatically.
- Fast thinking
 - Critical thinking
 - No thinking
 - Biased thinking
36. Why should humans make the critical decisions?
- Because AI is slower.
 - Because AI cannot analyze data.
 - Because humans do not make mistakes.
 - Because humans have awareness, ethics, and empathy.



37. AI systems become "biased" when they are trained using
a. too much data
b. very fast computers
c. incomplete or unfair data
d. diverse and fair data
38. When does bias occur in Artificial Intelligence?
a. When the data is diverse.
b. When there is a lot of data.
c. When the data is limited or unfair.
d. When the data is updated.
39. If a facial recognition system only recognizes one race, this is an example of
a. fairness
b. bias
c. responsibility
d. privacy
40. If a facial recognition system is trained using data from only one race, it will
a. work efficiently for everyone.
b. become faster.
c. improve in translation.
d. fail to recognize other races.
41. Humans set the that AI systems must follow.
a. colors
b. values and principles
c. weather
d. prices
42. The role of a smart user when dealing with AI is to
a. believe everything they see
b. ignore verifying information
c. think critically and verify information
d. use AI only for playing
43. Treating all people equally without discrimination based on race or gender is called
a. privacy
b. complexity
c. speed
d. fairness
44. Which of the following is an example of responsible use of AI?
a. Using it to harm others.
b. Using it to improve people's lives.
c. Using it to spread rumors.
d. Using it without reviewing the data.
45. What is an element AI does not have that humans have?
a. The ability to feel and understand values.
b. The ability to store data.
c. The ability to learn.
d. The ability to analyze numbers.



46. Responsible AI users should
- a. think critically
 - b. verify information
 - c. use AI ethically
 - d. all of them
47. The goal of the "Young AI Innovator" project is:
- a. Designing games only.
 - b. Creating AI solutions for real problems.
 - c. Writing complex codes.
 - d. Using AI in everything without rules.
48. What is an Artificial Neuron?
- a. A program for running games.
 - b. A unit that tries to imitate the way humans think.
 - c. A part of the computer's memory.
 - d. A real biological cell.
49. What is the function of inputs in an artificial neuron?
- a. Saving results.
 - b. Sending decisions.
 - c. Receiving information.
 - d. Deleting data.
50. Weights are used to
- a. determine the importance of each piece of information.
 - b. decorate data.
 - c. store sounds.
 - d. run the activation function.
51. The activation function works like a that turns the neuron on or off.
- a. router
 - b. switch
 - c. cable
 - d. battery
52. Bias is similar to
- a. deleting a mark.
 - b. increasing a small number to help the cell.
 - c. doubling data.
 - d. reducing weights.
53. Calculation in a neuron is performed by the formula: $(\text{Inputs} \times \text{Weights}) + \dots$
- a. Output
 - b. Ratio
 - c. Activation
 - d. Bias
54. One of the functions of Bias is that
- a. it reduces the accuracy of the cell.
 - b. it prevents the cell from working.
 - c. it makes the cell more flexible.
 - d. it cancels the use of inputs.



55. What is the function of the Activation Function?
- a. Managing memory.
 - b. Calculating weights.
 - c. Storing data.
 - d. Making the final decision.
56. The function gives the same value if it's positive but changes negative values to zero.
- a. ReLU
 - b. Sigmoid
 - c. Threshold
 - d. AI
57. The Threshold function works as a/an
- a. probability.
 - b. On/Off switch based on a certain limit.
 - c. color scale.
 - d. audio system.
58. A student needing 5 extra marks as help to pass is an example of
- a. Weights
 - b. Bias
 - c. Outputs
 - d. ReLU
59. The Sigmoid function gives
- a. a negative number.
 - b. a number between 0 and 1 (probability).
 - c. a random number.
 - d. a number greater than 100.
60. The Threshold function gives a "Pass" result if the value is a specific number.
- a. less than
 - b. equal to
 - c. greater than
 - d. both a and b
61. Which part of the cell helps it make a decision even when inputs are zero?
- a. Inputs.
 - b. Weights.
 - c. Bias.
 - d. Input function.
62. To determine if a student is "Excellent" or "Weak", we use the
- a. activation function
 - b. bias only
 - c. physical wires
 - d. modem
63. If the computer says there is an 85% probability that an image is a cat, it is using
- a. ReLU
 - b. Sigmoid
 - c. Threshold
 - d. Wired network



64. In a neuron: What happens after calculating (Inputs $\times$ Weights + Bias)?
- a. Data is erased.
 - b. It's sent directly to the user.
 - c. The cell stops working.
 - d. It's passed to the activation function.
65. The final result given by the artificial neuron is called
- a. Input
 - b. Weight
 - c. Output
 - d. Bias
66. What is the basic building unit of Artificial Neural Networks?
- a. Complex algorithms.
 - b. The artificial neuron.
 - c. Smart assistants.
 - d. Instant translation function.
67. Artificial neural networks are used in
- a. image recognition
 - b. language translation
 - c. predicting weather
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- a. max()
- b. min()
- c. print()
- d. mean()

93. The Maximum value (Max) is

- a. the largest value in the data.
- b. the smallest value in the data.
- c. the average of values.
- d. the result of multiplying values.

94. Which type of data can be analyzed using NLP?

- a. Numerical data.
- b. Images.
- c. Text.
- d. Dates only.

95. What is the benefit of pd.to_datetime()?

- a. Converting text into numbers.
- b. Converting text dates into a time format.
- c. Deleting dates.
- d. Sorting data automatically.

96. What is the data type in the list data = [10, 20, 30, 40, 50]?

- a. Text data.
- b. Date data.
- c. Numerical data.
- d. Audio data.



97. Which library is used for data visualization in Python?

- a. Pandas.
- b. NumPy.
- c. Datetime.
- d. Matplotlib.

98. One advantage of Python in data analysis is

- a. its limited support resources
- b. that it works only offline
- c. its large support community
- d. that it works only with numbers

Q2: Put (✓) or (X)

1. The idea of AI is a very modern idea that appeared in the last few years. (X)
2. The idea of AI faced many challenges in its early days. (✓)
3. The Turing Test is a way to know if a machine can successfully simulate human thinking. (✓)
4. Machine Learning is a branch of AI that allows computers to learn from experience. (✓)
5. AI is only used in games and entertainment. (X)
6. Deep Learning is an advanced type of Machine Learning. (✓)
7. AI will be a helpful tool in many future jobs. (✓)
8. Alan Turing is often called the "Father of Artificial Intelligence." (✓)
9. The term "Artificial Intelligence" was first used in 1990. (X)
10. Early AI programs like "General Problem Solver" were as fast as modern laptops. (X)
11. Expert systems try to copy the knowledge of specialized human experts. (✓)
12. Machine Learning allows computers to learn from data instead of being programmed for every step. (✓)
13. Deep Learning uses "Artificial Neural Networks" to process information. (✓)
14. Learning about AI is only important for people who want to be scientists. (X)
15. AI can help solve traffic congestion by analyzing data and organizing flow. (✓)
16. Artificial Intelligence can feel human emotions. (X)
17. AI makes machines act as if they are thinking. (✓)
18. Artificial Intelligence relies on processing data only without self-awareness. (✓)
19. AI feel complex emotions like joy, sadness, love, and empathy. (X)



20. Video games use AI to make competitors act more intelligently. (✓)
21. Characters in video games can learn from the user's play style. (✓)
22. Voice assistants like Siri and Alexa use Natural Language Processing (NLP). (✓)
23. Human intelligence have creativity while Artificial Intelligence imitates and does not innovate. (✓)
24. AI processes information much slower than the human brain. (X)
25. The phone camera that improves photos automatically uses Artificial Intelligence. (✓)
26. AI can understand the deep "feeling" of a piece of music. (X)
27. Smart vacuum cleaners are an example of AI used at home. (✓)
28. Smart search engines like Google do not rely on Artificial Intelligence. (X)
29. Non-Player Characters (NPCs) in games can learn from your playing style. (✓)
30. Artificial Intelligence can understand sarcasm and emotions with the same accuracy as humans. (X)
31. AI makes decisions based on data and rules, not feelings. (✓)
32. Robots can be programmed to make decisions based on data. (✓)
33. Smart devices in homes such as smart vacuum cleaners rely on AI. (✓)
34. AI is a powerful technology that can improve our lives. (✓)
35. AI should be designed to be fair for everyone. (✓)
36. Humans have empathy and ethics that AI does not. (✓)
37. No one has the right to use your personal data without your permission. (✓)
38. AI can make critical decisions better than humans. (X)
39. Humans are the final decision-makers because they have ethics and awareness. (✓)
40. Critical thinking means accepting AI results without any questions. (X)
41. Bias in AI may happen due to incomplete or unfair data. (✓)
42. National security decisions must always be made by humans. (✓)
43. It is safe to trust all AI results without verifying them. (X)
44. Using diverse data helps make AI fairer. (✓)
45. Human supervision is not necessary because AI is very powerful. (X)
46. Using AI to improve people's lives is a responsible use of AI. (✓)
47. Privacy means that no one should use your data without your permission. (✓)
48. Facial recognition is not affected by the quality of data used in training AI. (X)
49. AI can understand complex cultural situations better than humans. (X)
50. One role of the smart AI user is critical thinking and verifying information. (✓)



51. Scientists created artificial neurons to help machines make decisions. (✓)
52. The artificial neuron tries to imitate the work of neurons in the human brain. (✓)
53. Weights in a neuron do not affect the final decision. (X)
54. Bias helps the cell give results even in the absence of inputs. (✓)
55. The Sigmoid function only gives a "Yes" or "No" answer. (X)
56. The activation function is responsible for executing the cell's final decision. (✓)
57. The Threshold function gives values between 0 and 1 only. (X)
58. In artificial neuron, the formula for calculation is $(\text{Inputs} + \text{Weights}) \times \text{Bias}$. (X)
59. The Sigmoid function is used to give a probability or ratio. (✓)
60. Bias makes the artificial neuron more flexible in its decisions. (✓)
61. Inputs can be images, sounds, or numbers. (✓)
62. If a value is less than the specific number in a Threshold function, the result is 1. (X)
63. Without an activation function, the neuron will not be able to make a decision. (✓)
64. An artificial neuron can give a result even when inputs are zero. (✓)
65. Weights are always fixed values that do not change. (X)
66. ReLU function focuses only on positive values. (✓)
67. Bias has no role in adjusting the cell's performance. (X)
68. The artificial neuron is the basic building unit of Artificial Neural Networks. (✓)
69. Artificial neurons are used only in language translation and weather prediction, and are not used in image recognition. (X)
70. A neural network cannot learn from previous experiences. (X)
71. Identifying the type of input data (such as numbers or images) is the first step in building an artificial neuron. (✓)
72. To get the result, we add inputs before multiplying them by weights. (X)
73. Giving a weight to each input is the step that directly comes before sending the result to the activation function. (X)
74. The final goal of an artificial neuron is to obtain the final output which represents a decision or prediction. (✓)
75. The activation function analyzes the image using weights in the recognition example. (X)
76. Platforms like YouTube use neural networks for features such as suggesting videos. (✓)
77. One real-life application of artificial neurons is diagnosing diseases in hospitals. (✓)
78. When thousands of neurons are connected together, the network loses its ability to learn from experiences and improve over time. (X)



79. The activation function is responsible for getting the final output. (✓)
80. Self-driving cars are not considered complex problems that powerful neural networks can solve. (X)
81. Smart cameras that recognize faces are an example of a real-life application of the artificial neuron. (✓)
82. A neuron always gives the final answer and never sends data to other neurons. (X)
83. Improving performance over time is a characteristic of a neural network. (✓)
84. The result of multiplying inputs by weights is sent directly as the final output. (X)
99. Python is difficult for beginners to learn and use. (X)
100. Data analysis helps in making fact-based decisions. (✓)
101. Python does not contain libraries to support data analysis. (X)
102. The Pandas library is used to clean and process data. (✓)
103. Seaborn is a library used for scientific calculations. (X)
104. The np.mean() function is used to find the smallest value in a list. (X)
105. Numerical data includes integers and decimals. (✓)
106. The mean can be calculated manually without NumPy. (✓)
107. To calculate the mean, the list of numbers must be ordered. (X)
108. The result of calculating the mean is usually a decimal number. (✓)
109. Text data can never be analyzed. (X)
110. Min() is the function used to find the smallest value in a dataset. (✓)
111. pd.to_datetime() can reject invalid dates like "2023-13-01". (✓)
112. Weights and prices are examples of integer numerical data. (X)
113. The Maximum value (Max) is the smallest value in the data. (X)
114. Text data includes articles and customer comments. (✓)
115. The arithmetic mean produces a decimal number even if the results are whole numbers. (✓)
116. NumPy is used to calculate the time difference between two dates. (X)
117. Python can be used to analyze date and time data. (✓)
118. The print() function is used to display results on the screen. (✓)



حمل الآن

مجاناً وحصرياً

المراجعة رقم (5)

اختبار شهر مارس



.Question 1: Place a checkmark (√) or an X next to the following statements

Degree

- 1- Artificial intelligence will be a helpful tool in many future jobs. ()
2. Artificial intelligence can sense human emotions. ()
3. Facial recognition is not affected by the type of data used in training. ()
4. Input can be images, sounds, or numbers. ()
5. Determining the type of input data (e.g., numbers or images) is a necessary first step in building an artificial neural network. ()

Question 2: Choose the correct answer from the following options :-

Degree

- 1 .Who is the scientist who devised a famous test to determine if a machine is intelligent.. ?
- a. Isaac Newton

b. Albert Einstein

c. Alan Turing

d. Al-Khwarizmi
2. An example of the use of artificial intelligence in mobile phones is
- a. Writing messages only

b. Playing songs

c. Facial recognition

d. Manually opening the camera
- 3 .When does bias occur in artificial intelligence..... ?
- a. When the data is diverse

b. When the data is scarce or unfair

c. When the data is abundant

d. When the data is recent
- 4 .One of the functions of bias is.....
- a. It reduces the accuracy of the cell.

b. It prevents the cell from functioning.

c. It makes the cell more flexible.

d. It eliminates the use of inputs
- 5 .One of the real-life applications of the artificial neural cell that relates to content suggestion is:
- a. Smart assistants such as Siri

b. Cameras that recognize faces

c. Recommending movies on platforms such as Netflix

d. Self-driving cars

Question 1: Place a checkmark (✓) or an X next to the following statements

Degree

1. Machine learning is a branch of artificial intelligence that allows computers to learn from experience. ()
2. Artificial intelligence relies solely on data processing without self-awareness.()
3. Artificial intelligence can make critical decisions better than humans. ()
4. An artificial neuron attempts to mimic the function of neurons in the human brain.()
5. The neuron is the fundamental building block upon which artificial neural networks are constructed. ()

Question 2: Choose the correct answer from the following options :-

Degree

- 1 .What is the best description of artificial intelligence?
- A. Making machines faster and stronger. B. Making machines bigger.
- C. Making machines think and learn like humans. D. Making machines smaller.
- 2 .Artificial intelligence is characterized by:
- A. Having feelings. B. Free artistic creativity.
- C. Possessing self-awareness. D. Processing data at extremely high speeds.
- 3 .Which of the following is an example of the responsible use of artificial intelligence?
- A. Using it to harm others. B. Using it to improve people's lives.
- C. Using it to spread rumors. D. Using it without data verification.
- 4 .What is an artificial neural network?
- A. A program for running games. B. A unit that attempts to mimic human thinking.
- C. Part of a computer's memory. D. A real biological cell.
5. What is the basis for building what is known as artificial neural networks?
- A. Complex algorithms. B. An artificial neural network.
- C. Intelligent assistants. D. Real-time translation functions.



School----- student name-----

Class date / / 2025

.Question 1: Place a checkmark (√) or an X next to the following statements

Degree

1. One of the challenges artificial intelligence faced in The great initial was the slowness of computers. ()
2. Human intelligence possesses creativity, while artificial intelligence imitates rather than innovates. ()
3. It is unsafe to trust all results from artificial intelligence without verifying them.()
4. The activation function is responsible for executing the cell's final decision. ()
5. When thousands of neurons are connected together, the network loses its ability to learn from experience and improve itself over time. ()

Question 2: Choose the correct answer from the options in parentheses.

Degree

- 1- The Sigmoid function works as a
- 1- A negative number

B. A number between 0 and 1 (probability)

C. A random number

D. A number greater than 100
2. An example of privacy protection is
- A. Sharing your data with any application without review.

B. Reading privacy settings before using a new application.

C. Posting all your information online.

D. Giving your password to a friend.
3. Siri is an example of
- A. Image processing

B. Paint

C. An internet browser

D. An AI-powered voice assistant.
4. Learning a computer to play chess and beat the best players is an early example of
- A. Machine learning

B. The internet

C. 3D printing

D. Using office software
5. What is the step after determining the data type and assigning weight to each input in building an artificial neural network?
- A. Obtaining the final output

B. Passing the output to the activation function.

c) Sum the inputs after multiplying them by their weights.

d) Analyze the image using the weights

Q 1: Place a checkmark (✓) or an X next to the following statements

Degree

1. The appeering of the internet has helped provide maseve amounts of data. ()
2. One of the capabilities of artificial intelligence is learning from data. ()
3. Human intelligence is characterized by creativity and original innovation. ()
4. Artificial intelligence can understand sarcasm and emotions with the same accuracy as humans. ()
5. Using non-diverse data helps achieve fairness. ()
6. Artificial intelligence is a tremendous power that needs to be used responsibly.()
7. Output represents the output of an artificial neural network. ()
8. One of the benefits of bias is making the network more flexible. ()
9. Connecting thousands of artificial neural networks together produces a powerful neural network. ()
10. Smart cameras that recognize faces rely on artificial neural networks. ()

Q 2: Choose the correct answer from the options in parentheses.

Degree

(Experiments – Sigmoid – Activation Function – Inputs – Artificial Intelligence)

- 1- Artificial neural networks can learn from
- 2-This refers to the information that enters the cell, such as (images – text – numbers)
- 3- The function gives a percentage or probability between 0 and 1
- 4- is a part of the artificial neural cell and makes the final decision
- 5- enhancing the image Automatically on a phone is done by



School-----

Class

student name-----

date / / 2025

Sample 1



م	A: True or false		م	B: choose
1	✓		1	Alan Turing
2	x		2	Facial Recognition
3	x		3	When data is scarce or unfair, it makes the cell more resilient.
4	✓		4	Movie suggestions on platforms like Netflix
5	✓		5	Alan Turing

Sample 2

م	A: True or false		م	B: choose
1	✓		1	Making machines think and learn like humans
2	✓		2	Processing data at lightning speed
3	x		3	Using it to improve people's lives
4	✓		4	A unit that attempts to mimic human thought processes
5	✓		5	Artificial neural network

Sample 3

م	A: True or false		م	B: choose
1	✓		1	A number between 0 and 1 (probability)
2	✓		2	Read privacy settings before using a new app.
3	x		3	An AI-powered voice assistant
4	✓		4	Machine learning
5	✓		5	Input summation after multiplying it by its weights

Sample 4

م	A: True or false				م	B: choose
1	✓	6	✓		1	Experiments
2	✓	7	✓		2	Inputs
3	✓	8	✓		3	Sigmoid
4	x	9	✓		4	Activation Function
5	x	10	✓		5	Artificial Intelligence

كيفية طباعة صفحات معينة من ملف معين مثلا ازاي نطبع الصفحات من صفحة 4 الى صفحة 9

